FLORA OF TROPICAL AFRICA.

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OF

TROPICAL AFRICA.

EDITED BY

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PREFACE.

THE "Flora of Tropical Africa" has met with many vicissitudes. It was projected by Sir William Jackson Hooker as part of the series of Colonial and Indian Floras to be produced at Kew which he initiated. The immediate impulse which led the Government to sanction the undertaking was given by Dr. Livingstone on his return from the Zambesi Expedition (1858-64), to which Dr. (afterwards Sir John) Kirk had been attached as naturalist. The work having been offered to Dr. Kirk and declined by him was entrusted in 1864 to Sir Joseph Hooker and Professor Oliver jointly, and was to be completed in four volumes.

Sir Joseph Hooker succeeded to the Directorship of the Royal Gardens in 1865, and was in consequence obliged to resign the preparation of the Flora to Professor Oliver, although he contributed some share to both volumes I. and II. Professor Oliver further obtained the assistance of other botanists.

Vol. I. appeared in 1868, vol. II. in 1871, and vol. III. in 1877. It was soon evident that the work would exceed the limits at first assigned to it. Not less than five additional volumes will be now required to enumerate completely and describe the known plants of Tropical Africa.

In the preface to the first volume Professor Oliver states that for the geographical region to which he gave the name Lower Guinea he was almost wholly dependent on the Angolan collections made at the cost of the Portuguese Government in 1853-61 by Dr. Frederick Welwitsch.

This botanist, Professor Oliver adds, "has freely granted us the opportunity of inspecting his collections, which, in respect of judicious selection and admirable preservation, are without rival. His carefully accurate notes upon the fresh plants have also been at our service. Without the access to Dr. Welwitsch's Herbarium this region would have been comparatively a blank in the present work."

Dr. Welwitsch died in 1872, having bequeathed his Herbarium to the British Museum. This led to prolonged litigation on the part of the Portuguese Government, ending in a compromise. But the

collections were no longer available for study at Kew, and Professor Oliver eventually abandoned the further prosecution of the work. He retired from his official post in 1890.

Meanwhile the publication of the first three volumes had considerably stimulated botanical research in Africa. Sir John Kirk had become Consul-General at Zanzibar, and lost no opportunity of encouraging collectors. Sir H. H. Johnston, K.C.B., H.M. Commissioner in British Central Africa, imitated his example in British Central Africa. Much valuable work in Equatorial Africa was also done by the missionaries of the Church Missionary Society. The Temperate flora discovered on Kilimanjaro by the Rev. C. New, who was probably the first human being to reach its snow-line, and the collections subsequently made by Mr. Joseph Thomson on the mountains of East Equatorial Africa confirmed the relationships of the high-level floras of Tropical Africa with those of the northern hemisphere on the one hand and of the Cape on the other, which were first indicated by Mr. Mann's collections on the Cameroons. These relationships raise theoretical questions of the highest interest. The various Delimitation Commissions which followed the partition of the continent each yielded botanical results of more or less value. And the addition of new territories to the Colonies on the West Coast stimulated the desire of their Governments for an investigation of their vegetable products.

The result was that an immense mass of material poured into Kew, and, though individual collections were worked out in a series of scattered papers, a general demand sprang up in foreign countries, as well as at home, for a comprehensive work which would sum up the knowledge which had been acquired, with no little expenditure of labour and even of life, of the vegetation of Tropical Africa.

The desire eventually found expression in the following letter :—

"FOREIGN OFFICE to ROYAL GARDENS, KEW.

"FOREIGN OFFICE, March 21st, 1891.

"SIR,—I am directed by the Marquis of Salisbury to state to you that his attention has been called to the fact that three volumes only of the 'Flora of Tropical Africa' have as yet been published, and that the want of a complete handbook describing known plants impedes their study by Her Majesty's officers in the different parts of Africa which are now being opened up to civilisation.

"A knowledge of African botany is of great practical value, as was proved by the discovery of Sir John Kirk, whilst employed as Her Majesty's Agent at Zanzibar, of a plant previously unknown, which now supplies annually £200,000 worth of india-rubber to the Zanzibar market. So, too, on the West Coast of Africa, the trade consists almost entirely of vegetable products some of which have only recently been brought to light.

"Lord Salisbury is of opinion that a proper knowledge of the flora of Tropical Africa would do much to aid the development of the territories

over which this country has recently acquired an influence and he would therefore suggest that the completion of the work in question should at once be carried out.

"I am, &c.,

"(Signed) T. V. LISTER.

"THE DIRECTOR, Kew Gardens."

In replying to this letter I pointed out that my scientific staff was so occupied with routine work that it was impossible to treat the completion of the Flora as a matter of official duty. If, however, as in the first instance, it was regarded as an extra-official undertaking, I was willing to do my best, with such voluntary assistance as I could obtain, to assist Her Majesty's Government in getting the work completed. It was accordingly agreed that a commencement should be made in 1892. Much preliminary labour had to be accomplished, and in order to avoid the inconvenience of anticipation, provisional technical descriptions of new African plants received at Kew were drawn up by members of the staff and officially published in the Kew Bulletin. These were available for working up subsequently in the Flora. The number of species so published up to the present date amounts to upwards of 800.

A list of the known plants occurring in British Central Africa, amounting to upwards of 1,800, compiled from the Kew records by a member of the Kew staff, Mr. I. H. Burkill, M.A., is printed in Sir H. H. Johnston's "British Central Africa," pp. 233-284, prefaced by a brief history of botanical exploration in the Protectorate (see Kew Bulletin, 1897, pp. 170-171). It is estimated that the number of species would be increased by the intercalation of recent additions to 2,500.

As to the general scope of the work, it will be convenient to quote the following passage from Professor Oliver's preface to the first volume. It still in great measure holds good:—

"From our very imperfect knowledge of the vegetation of many parts of the continent, even of those which have been long more or less in European occupation, and from our complete ignorance of that of the immensely larger area not yet opened up, the present work must not be regarded as presenting anything like a complete account of Tropical African Botany. It serves rather as a vehicle for the publication of the important botanical results of much recent expenditure of life, toil, and money, which would otherwise have been lost to science or anticipated by other nations, and (embracing references to all hitherto published African species) as a repertory which it is hoped may be useful to botanists, no less than to future explorers and residents in Africa interested in the natural productions and economic products of the country."

In the mode of execution the pattern of the published volumes has been closely adhered to. I may again quote Professor Oliver's preface:—

"The 'Flora of Tropical Africa,' forming one of the series of Floras undertaken, at the instance of the late Sir William J.

Hooker, under the authority of the Home or of Colonial Governments it is necessarily uniform in general plan with those which have been already issued.

"The principal features of this plan, as settled by Sir W. J. Hooker, and described in his report, are these :—

"1st. The descriptions are drawn up in the English language, Mr. Bentham's 'Introduction to Botany, drawn up with special reference to Local Floras,' containing the technical terms used in the descriptions, being prefixed to the work.

"2nd. The general sequence of Natural Orders adopted is that of the 'Prodromus' of De Candolle, being that which experience has shown to be practically the most convenient. In accordance with this sequence, British Botanists are accustomed to arrange their Herbaria and works of descriptive Botany. In the more detailed arrangement of the genera, the 'Genera Plantarum' of Messrs. Bentham and Hooker has been followed, and a reference to that work is given with each genus.

"With regard to the synonymy of the species here described, while the authors have endeavoured to quote all names which have been applied to Tropical African plants, they have not, in the case of widely diffused species, regarded it as either necessary or desirable to include their whole synonymy, the reliable citation of which would have involved very much more time, labour, and space than the end to be attained would warrant; besides that, it would be out of place in a special work of this kind. Any new identifications of African with extra-African species are, of course, recorded."

In one particular, however, I have been obliged to depart slightly from the plan of my predecessor. The last of the three published volumes of the "Flora of Tropical Africa" appeared in 1877. Since then our knowledge of the vegetation has increased very greatly. Large tracts which were unexplored botanically at that date have yielded numerous and copious collections. In resuming the work, it has therefore been found necessary to more clearly define the regions into which Professor Oliver divided the whole area. In attempting this, advantage has been taken as far as possible of political boundaries, since they admit of easy recognition. The regions may now be briefly defined as follows:

1. Upper Guinea.—The Western Coast region from the mouth of the Senegal River to the southern boundary of the Cameroons. It contains practically the whole of the Niger Basin. It is bounded on the north by a line stretching from the mouth of the Senegal River to Lake Chad; on the east by the 15th meridian of East longitude to its intersection with the southern boundary of the Cameroons, which bounds it to the south. It includes also the island of Fernando Po.

2. North Central.—This includes the Sahara. It is bounded to the north by the Tropic of Cancer; on the west by the Atlantic; on the east by the 26th meridian of East longitude; on the south by the Upper Guinea region and the Congo Free State.

3. NILE LAND.—The Nile Basin. It is bounded to the west by the 26th meridian of East longitude; to the east by the Red Sea and the Indian Ocean; to the south by the Congo Free State and German East Africa.

4. LOWER GUINEA.—The Western Coast region from the southern boundary of the Cameroons to the Tropic of Capricorn. It contains the lower course of the Congo, and is bounded to the east by the Congo Free State, the river Kwango, and the 20th meridian of East longitude.

5. SOUTH CENTRAL.—Comprises the Congo Free State, Lunda and Portuguese West Africa, east of the 20th meridian of longitude (Lobale).

6. MOZAMBIQUE.—The East Coast from the northern boundary of German East Africa to the Tropic of Capricorn. It includes Portuguese East Africa and British territories to the Tropic.

In the preface to the first volume Professor Oliver enumerated the materials which he had employed. These it is not necessary to recapitulate. Copious accessions have, however, reached Kew since 1868, and the more important of these are enumerated below.

1. UPPER GUINEA.

G. L. Bates. Plants of the Cameroons.

Captain (afterwards Sir Richard) Burton and Commander V. L. Cameron. A small collection from the Gold Coast.

Surgeon-Captain H. A. Cummins. Plants collected during the Ashanti Expedition of 1895-6. (See Kew Bulletin, 1898, pp. 65-82.)

G. F. Scott-Elliot. A large collection made during the Anglo-French Sierra Leone Delimitation Commission of 1891-2. (See Journal Linnean Society, Botany, vol. xxx. pp. 64-100.)

Professor A. Engler, Director of the Royal Botanical Gardens and Museums, Berlin, has contributed the collections of Braun, Preuss, Staudt and Zenker from the Cameroons.

Dr. H. H. Johnston. A small collection from Sierra Leone.

Sir H. H. Johnston, K.C.B. A collection from the Cameroons.

Dr. Brown Lester. Plants collected during the Anglo-French Gambia Delimitation Commission, 1890-1. (See Kew Bulletin, 1891, pp. 268-275.)

H. Millen, Curator, Botanic Station, Lagos. (Kew Bulletin, 1892, p. 72.)

Alvan Millson, Assistant Colonial Secretary, Gold Coast. Plants from Yoruba. (See Kew Bulletin, 1891, pp. 206-219. Died 1896.)

Sir Alfred Moloney, K.C.M.G., late Governor of Lagos. A small collection of Lagos plants.

Dr. Rowland, C.M.G., Chief Medical Officer, Lagos. Plants chiefly collected during the Expedition undertaken by Sir

Gilbert Carter, K.C.M.G., late Governor of Lagos, into the interior. (Kew Bulletin, 1893, pp. 146 and 369.)

H. Veitch, F.L.S. Collection made by Kalbreyer in the region of the Niger Delta and Cameroons.

2. North Central.

The material still remains extremely scanty, and nothing of importance has been added.

3. Nile Land.

Mons. W. Barbey. Dr. G. Schweinfurth's collections from Eritrea.

Miss Edith Cole and Mrs. Lort Phillips. A collection from Somaliland. (See Kew Bulletin, 1895, pp. 158 and 211-230.)

G. F. Scott-Elliot. A large collection from British East Africa made during the Ruwenzori Expedition, 1893-4. (See Kew Bulletin, 1895, pp. 77-78.)

Professor A. Engler has communicated the plants of Steudner from Abyssinia and of Stuhlmann from Ruwenzori.

Dr. J. M. Hildebrandt. Collection from British East Africa. (Died 1881.)

Sir H. H. Johnston, K.C.B. Collections made during the Kilimanjaro Expedition. (See Transactions Linnean Society, Second Series, Botany, vol. ii. pp. 327-355.)

Dr. G. Schweinfurth. Collections from the upper tributaries of the Nile.

Rev. T. Wakefield. A collection from British East Africa, chiefly near Mombasa.

Rev. C. T. Wilson. A collection from Uganda and Unyoro.

4. Lower Guinea.

G. L. Bates. Plants from Gaboon.

Professor J. A. Henriques, University of Coimbra. Collections from Island of St. Thomas, collected by F. Quintas and A. Moller.

Sir H. H. Johnston, K.C.B. A collection from Angola.

J. J. Monteiro. Plants from Angola. (Died 1878.)

Professor Hans Schinz. Plants from German South-West Africa.

H. Soyaux. Plants from Gaboon and Loango.

5. South Central.

The vegetation of this region, which includes the Congo Free State, is, although undoubtedly very rich, almost entirely unknown. Professor Engler has communicated plants collected by Buchner, Büttner, and Pogge. A part of Dr. G. Schweinfurth's collections (from the Monbuttu country) also belong to it.

Professor Oliver states in his preface that Sir John Kirk's collections on the Upper Zambesi had been lost. They were

despatched to England in 1861 on H.M.S. Sidon and were never heard of again till they were discovered in Portsmouth Dockyard in 1883.

6. Mozambique District.

Right Honourable James Bryce, F.R.S. Plants from Mashonaland.

J. Buchanan, C.M.G. A large collection made in Nyasaland. (Kew Bulletin, 1892, p. 249 ; and death, 1896, p. 148.)

K. J. Cameron. Collections from Nyasaland.

Commander (afterwards Captain) V. L. Cameron. Plants from the neighbourhood of Lake Tanganyika. (Died 1894.)

Alexander Carson, B.Sc. Plants from South of Lake Tanganyika. (See Kew Bulletin, 1893, pp. 343, 344; 1895, p. 46, pp. 63-75 and 288-293 ; and death, 1896, pp. 148-9.)

G. F. Scott-Elliot. Collection from German East Africa and Nyasaland made during the Ruwenzori Expedition, 1893-4.

Professor A. Engler has presented collections, rich in novelties, from Usambara and various other parts of German East Africa, made by Baumann, Fischer, Holst, Stuhlmann, and Volkens. (Kew Bulletin, 1897, p. 241.)

Bishop Hannington. Plants from German East Africa. (Assassinated 1885.)

Dr. Emil Holub. Collection from Rhodesia, South of the Zambesi.

Rev. W. P. Johnson. Collection from mountains East of Lake Nyasa.

Sir H. H. Johnston, K.C.B. Collections from Nyasaland and Kilimanjaro.

Sir John Kirk, G.C.M.G. Plants from Zanzibar and other parts of East Tropical Africa.

J. T. Last. Collection from Namuli Mountains in Portuguese East Africa and Nyasaland.

Dr. Livingstone. Eight fragmentary specimens found in his pocket-book after his death.

Major F. D. and Lieut. E. J. Lugard. Plants from Ngamiland. (Kew Bulletin, 1897, p. 242.)

J. McClounie. Plants from Nyasaland. (Kew Bulletin, 1895, p. 158.)

Rev. C. New. Collection from Kilimanjaro. (See Journal Linnean Society, Botany, vol. xiv. pp. 141-6. Died 1875.)

Dr. T. G. Nicholson. Plants from North Nyasaland and Upper Loangwa River.

W. H. Nutt. Plants from South of Lake Tanganyika.

F. Oates (presented by C. G. Oates). Plants from Matabeleland. (See "Matabele Land," 1st ed. pp. 366-369 ; 2nd ed. pp. 390-413. Died 1875.)

L. Scott. Plants from Portuguese East Africa and Nyasaland.

Lieutenant C. S. Smith. Plants from Umba Valley, German East Africa, collected during the Anglo-German Delimitation Commission. (Kew Bulletin, 1893, p. 146.)

Joseph Thomson. Collections from the neighbourhood of Lakes Nyasa and Tanganyika. (See Journal Linnean Society, Botany, vol. xxi. pp. 392-406. Died 1895.)

Alexander Whyte. An important collection from Nyasaland. (See Kew Bulletin, 1897, pp. 241, 243-300; 1898, pp. 145-164.)

As soon as I was able to organise the necessary staff the work was attacked at various points. But some time necessarily elapsed before sufficient material was accumulated to commence printing. When a work of this kind is once planned out, it is immaterial what part is first issued. I eventually decided to first issue the present volume (the seventh), devoted to the Petaloid Monocotyledons, as these groups of plants are of wider general interest. The printing of the volume commenced in July of last year, and has been attended with very considerable difficulties. Whether it is followed by any other volumes will largely depend on the extent to which these difficulties are removed.

I have to express my obligations for the sympathetic assistance I have received from the following foreign botanists:—

Mons. W. Barbey, Herbier Boissier, Geneva.

Professor Bureau, Jardin des Plantes, Paris, who has obligingly lent the specimens of *Liliaceæ* from the French Congo described by Mons. Henri Hua.

Professor A. Engler, Director of the Royal Botanical Garden and Museums, Berlin, who has communicated important collections made by German travellers as well as numerous publications.

Professor Th. M. Fries, Director of the Botanic Gardens, Upsala, for the loan of the types of Swartz's orchids.

Dr. Hans Schinz, Professor of Botany, Zurich.

I have further to record my acknowledgements of the assistance given me by Mr. C. H. Wright in preparing the manuscript for the press and in checking the proofs, and to Mr. N. E. Brown for working out the geographical distribution.

For the detailed topography the third edition of the "Spezialkarte von Afrika," Gotha: Justus Perthes, 1893, has been chiefly used.

W. T. T. D.

Kew, Aug. 1898.

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CONSPECTUS OF THE ORDERS CONTAINED IN THE SEVENTH VOLUME.

Class II. **MONOCOTYLEDONES.**

Embryo with a single cotyledon. Perianth usually trimerous. Leaves parallel-veined. Vascular bundles irregularly scattered in the stem.

Series I. Microspermæ.—*Perianth (at least the inner) petaloid. Ovary inferior,* 1*-celled with* 3 *parietal placentas, rarely* 3- *or* 6- *celled with axile placentas. Seeds small, numerous, exalbuminous.*

CXXXI. Hydrocharideæ. Aquatic herbs. Flowers regular, usually unisexual. Outer perianth calyx-like, inner (when present) petaloid. Stamens 3–12.

CXXXII. Burmanniaceæ. Terrestrial, usually leafless, herbs. Flowers regular, rarely irregular. Perianth petaloid. Stamens 3.

CXXXIII. Orchideæ. Terrestrial or epiphytic, rarely climbing, herbs. Flowers usually very irregular. Perianth petaloid. Androecium united with the gynæceum into a column; anther 1, sessile or subsessile on the column.

Series II. Epigynæ.—*Perianth (at least the inner) petaloid. Ovary inferior (half-inferior or superior in* Hæmodoraceæ*). Albumen copious.*

CXXXIV. Scitamineæ. Flowers irregular. Outer perianth usually calyx-like, inner petaloid. Stamens 1 or 5 perfect; staminodia 5 or 1. Ovary usually 3-celled; ovules 1–∞. Seed usually arillate. Embryo in a central canal of the albumen, straight or curved.

CXXXV. Hæmodoraceæ. Flowers hermaphrodite, regular or slightly irregular. Perianth petaloid, inferior or half-superior in the Tropical African genera. Stamens 6, all perfect. Ovary superior or half-inferior. Fruit dehiscent or indehiscent. Seed with embryo placed in a marginal hollow of the fleshy albumen.

CXXXVI. Irideæ. Flowers hermaphrodite, regular or irregular. Perianth petaloid, superior. Stamens 3, placed opposite the outer lobes of the perianth. Fruit a 3-celled capsule, with loculicidal dehiscence. Seed with embryo surrounded by horny albumen.

CXXXVII. Amaryllideæ. Flowers hermaphrodite, regular or nearly so. Perianth petaloid, superior. Stamens 6. Fruit a 3-celled capsule with loculicidal dehiscence or indehiscent. Seed with embryo enclosed in the usually fleshy albumen.

CXXXVIII. Taccaceæ. Flowers regular. Perianth petaloid or subherbaceous.

Stamens 6, included, hooded; anthers sessile within the hood. Ovary 1-celled; ovules 8, on parietal placentas. Embryo very small, enclosed in the albumen.

CXXXIX. DIOSCOREACEÆ. Flowers regular, dicœcious. Perianth small, green. Stamens 6 or 3. Fruit a triquetrous or trigonous capsule, with loculicidal dehiscence. Seed with embryo enclosed in the fleshy albumen.

Series III. Coronarieæ.—*Perianth (at least the inner) petaloid. Ovary superior, very rarely slightly immersed at the base (see also* CXXXV. HÆMODORACEÆ). *Albumen copious.*

CXL. LILIACEÆ. Flowers regular, hermaphrodite in the Tropical African genera, except *Smilax*. Perianth inferior. Stamens 6. Fruit a capsule with loculicidal or septicidal dehiscence, or a berry. Seed with embryo enclosed in fleshy or horny albumen.

FLORA OF TROPICAL AFRICA.

Order CXXXI. **HYDROCHARIDEÆ**. (By C. H. Wright.)

Flowers regular, unisexual, rarely hermaphrodite, enclosed in a tubular or inflated spathe. Perianth 2- rarely 1-seriate, 3-merous, inner whorl petaloid, white or yellow. Stamens 3–12; filaments very short; anthers usually oblong. Ovary inferior, 1-celled, with 3–6 parietal placentas; more rarely several-celled by the intrusion of the placentas. Style divided. Ovules many, orthotropous or anatropous.—Aquatic, usually submerged, herbs. Stem short, stoloniferous or elongated and leafy all over. Leaves linear, lanceolate or broadly ovate. Spathes axillary, solitary, monœcious or diœcious.

An order containing about 50 species, extending through the tropical and temperate regions of both hemispheres.

Stem elongated, leafy. Freshwater.	
Leaves verticillate. Male spathe 1-flowered . . .	1. Hydrilla.
Leaves alternate or opposite. Male spathe many-flowered	2. Lagarosiphon.
Stems very short; leaves radical. Freshwater.	
Perianth simple	3. Vallisneria.
Perianth double.	
Styles 3	4. Blyxa.
Styles 6–15.	
Flowers hermaphrodite	5. Ottelia.
Flowers unisexual	6. Boottia.
Rhizome creeping. Marine.	
Stamens 6	7. Thalassia.
Stamens 3	8. Halophila.

1. **HYDRILLA**, L. C. Rich.; Benth. et Hook. f. Gen. Pl. iii. 450.

Diœcious. Male spathe sessile in the axil of the leaf, 1-flowered, turbinate, bursting irregularly. Perianth double; outer segments 3, ovate, acute, inner linear. Stamens 3; filaments thick; anther ovate, 2-celled, with longitudinal dehiscence. Rudiment of ovary none.

Female spathe tubular, bidentate. Perianth segments 6, narrower than in the male. Staminodes 0. Ovary produced beyond the spathe into a long filiform beak, 1-celled; placentas 3, rarely 2; styles 3. Ovules few, anatropous. Fruit narrow, slightly exserted from the ruptured spathe. Seeds oblong; spermoderm slightly produced at each end.—Aquatic herb, with submerged, branched stem. Leaves verticillate. Flowers small, solitary in the axils of the leaves.

This genus consists of a single variable species widely spread through Tropical Asia, the Mascarene Islands, and Australia.

1. **H. verticillata,** *Royle, Ill. Bot. Himal.* 376. Stem terete; lower internodes shorter than the leaves. Leaves 4 in a verticil, oblong, acute; 4–6 lin. long, $\frac{3}{4}$–$1\frac{1}{2}$ lin. wide, 1-nerved, dentate. Other characters as in the generic description.—Presl. Bot. Bemerk. 112; Engl. Pfl. Ost-Afr. C. 95. *Serpicula verticillata*, Roxb. Corom. Pl. t. 164.

Nile Land. British East Africa: Buddu (ex *Engler*).

Mozamb. Dist. German East Africa: Karagwe, Bukoba (ex *Engler*).

Var. β. *brevifolia*, Casp. in Pringsh. Jahrb. i. 415. Lower internodes much longer than the leaves. Leaves ovate or ovate oblong, 2–3 lin. long, 1–$1\frac{3}{4}$ lin. wide. Baker in Trans. Linn. Soc. xxix. 152; Engl. Pfl. Ost-Afr. C. 95.

Nile Land. Sources of the Nile, 2° N., *Speke and Grant!*

2. **LAGAROSIPHON**, Harv.; Benth. et Hook. f. Gen. Pl. iii. 450.

Spathes unisexual. Male ovate, 2-fid at the apex, many-flowered. Calyx 3-lobed; lobes narrow. Petals 3, ovate. Stamens 3; anthers ovate. Staminodes often 2–3. Female narrowly oblong, 1-flowered. Calyx and corolla similar to those of the male. Ovary 1-celled, shortly rostrate, with 3 parietal placentas; styles 3, erect; ovules many, orthotropous.—Stems elongated, branched, clothed all over with leaves. Leaves alternate, subopposite or (in *L. hydrilloides*) whorled, linear or linear lanceolate. Spathes axillary, solitary.

One species extends to South Africa, another is confined to the Mascarene Islands, and a third to India.

Female spathe entire or nearly so.	
Leaf with 26–33 teeth. Petals lanceolate	1. *L. Nyassæ.*
Leaf with 30 teeth. Petals ovate	2. *L. rubella.*
Leaf with 51–59 teeth. ♀ spathe with 2–3 teeth at the side	3. *L. Schweinfurthii.*
Leaf with 81–87 teeth. ♀ spathe without teeth	4. *L. Steudneri.*
Female spathe bifid.	
Leaves alternate or subopposite.	
Leaves 4–5 lin. long, setaceous. ♀ spathe not dentate at the sides	5. *L. tenuis.*
Leaves 6 lin. long, setaceous. ♀ spathe dentate at the sides	6. *L. muscoides.*
Leaves 6–7 lin. long, $\frac{1}{2}$ lin. broad, 3-nerved	7. *L. crispus.*
Leaves 6–11 lin. long, $\frac{1}{2}$ lin. broad, 1-nerved	8. *L. cordofanus.*
Imperfectly known species	9. *L. Fischeri.*
Leaves verticillate	10. *L. hydrilloides.*

1. **L. Nyassæ,** *Ridl. in Journ. Linn. Soc.* xxii. 234. A slender, moss-like plant. Stems extremely thin. Leaves linear-lanceolate, acute, 4–5 lin. long, 1 lin. wide, with 26–33 subappressed teeth on each margin. Female flowers very minute. Spathe lanceolate subentire. Perianth-tube 1 in. long, capillary; lobes lanceolate, obtuse. Ovary conical. Style deeply cleft.

Mozamb. Dist. Lake Nyasa: Livingstonia, *Laws*, 7!

2. **L. rubella,** *Ridl. in Journ. Linn. Soc.* xxii. 234. Stems 3–5 ft. long, slender, purple; internodes 4 lin. long. Leaves subopposite, linear, acuminate, 3 lin. long, extremely narrow; teeth about 30 on each margin, short. Male spathe short, obconic, 2 lin. long. Stamens many. Female flowers minute, reddish. Bracts pale, ovate, obtuse, shorter than the fruit, with ten teeth on either margin. Spathe quite entire. Perianth-tube 14 lin. long, very slender; lobes ovate rotundate, very obtuse. Ovary elongated, conical. Capsule 2 lin. long. Seeds 3, fusiform, $1\frac{1}{2}$ lin. long.

Lower Guinea. Angola: Huilla, *Welwitsch*, 6472!

3. **L. Schweinfurthii,** *Casp. in Bot. Zeit.* 1870, 88. Stem terete, $\frac{1}{2}$ lin. thick. Leaves scattered, linear-lanceolate, acute, 7 lin. long, $\frac{1}{2}$ line or less wide, the 3 marginal rows of cells with less chlorophyll than the central ones; teeth 51–59 on each side. Stipules 2, intrafoliaceous, obovate, obtuse; margin with a few papillæ. Female spathe subentire at the apex, with 2–3 teeth on either side.

Nile Land. Jur, *Schweinfurth*, 2457! Bongo, *Schweinfurth*, 2158!

4. **L. Steudneri,** *Casp. in Schweinf. Beitr. Fl. Æthiop.* 200, *t.* 4. Leaves linear-lanceolate, acute 5–8 lin. long, nearly 1 lin. wide, with 81–87 teeth on either side, the 2–3 rows of marginal cells narrower, longer and with less chlorophyll than the rest. Stipules lanceolate-oblong, entire attenuated towards the apex. Female spathe oblique and entire at the mouth. Perianth-tube twice as long as the leaves; lobes ovate. Stigmas 3, 2-fid.

Nile Land. Abyssinia: Wadela, *Steudner*, 640!

5. **L. tenuis,** *Rendle in Journ. Linn. Soc.* xxx. 380, *pl.* 31, *figs.* 1–7. A slender moss-like plant. Leaves crowded, linear, 4–5 lin. long, $\frac{1}{4}$–$\frac{1}{3}$ lin. broad at the base; apex subobtuse; margin with about 30 teeth directed upwards. Stipules minute, subulate. Female spathe 1 lin. long, bifid $\frac{1}{3}$ of its length. Perianth $\frac{3}{4}$ in. long; tube $\frac{3}{4}$ in. long; segments oblong linear, $\frac{1}{2}$ lin. long.

Nile Land. British East Africa: Kinani, East Ongalea Mountains, 2200 ft., *Gregory!*

6. **L. muscoides,** *Harv. in Hook. Journ. Bot.* iv. (1842) 230, *t.* 22. Stem slender, 1–2 ft. long. Leaves alternate or subopposite, linear, very acute, 1-nerved, the 4–5 marginal rows of cells destitute of chlorophyll; teeth 40–60, very acute. Stipules oval, attenuated at

the apex, quite entire. Male spathe axillary, solitary, sessile, ovate, with two deltoid lobes at the apex, surrounded by very slender teeth. Flowers about 30. Sepals 3, membranous, ovate. Petals 3, rather shorter and narrower than the sepals. Stamens 3, equal in length to the sepals and opposite to them. Female spathe axillary, solitary, sessile, oblong, opening by two triangular valves at the apex, surrounded by minute teeth. Perianth-tube long, slender; outer lobes ovate; inner ovate oblong, a little narrower and longer than the outer. Ovary oblong. Stigmas 3, bipartite.—*Hydrilla dregeana*, Presl. Bot. Bemerk. 112. *Hydrilla muscoides*, Planch. in Ann. Sci. Nat. Sér. 3, xi. (1849) 79.

Lower Guinea. Angola: Huilla and Cunene, *Johnston!*

An imperfect specimen collected in Bechuanaland by *Holub* probably belongs to this species.

7. **L. crispus,** *Rendle in Journ. Linn. Soc.* xxx. 381, *pl.* 31, *figs.* 8–17. A small herb with stiffish stem. Leaves sometimes subopposite, linear, 6–7 lin. long, ½ lin. broad, more or less recurved, 3-nerved, the weak lateral nerves connected by slender transverse veinlets with the conspicuous midrib, teeth about 40, directed upwards from a triangular base consisting of several cells. Male spathes cup-like, sessile in the axils of the leaves on the main stem, ½ lin. long, several-flowered. Stamens 3; filaments short, apiculate; anther-cells 2, pendulous, acute at the base. Female spathes solitary on the ultimate branches, flask-shaped, 2-fid, 1-flowered, 1 lin. long. Perianth-tube 9 lin. long; segments oblong, ⅓ lin. long. Stigmas papillose, ⅓ lin. long. Fruit broadly spindle-shaped, 1½ lin. long.

Mozamb. Dist. German East Africa: between the coast and Uyui, *Taylor!*

8. **L. cordofanus,** *Casp. in Pringsh. Jahrb.* i. 479 *and* 504. Stem terete, simple or sparingly branched. Leaves scattered, occasionally subopposite, linear, attenuated to a very acute point, 6–11 lin. long, ½ lin. broad, 1-nerved, with 34–44 teeth on either margin. Stipules 2, intrafoliaceous, ovate or ovate-oblong, with 3–4 very short papillæ at the apex. Male spathe subglobose, 2-fid, 6–8-flowered. Stamens 3. Female spathe, axillary, tubular, slightly inflated below, 2-fid. Outer perianth segments 3, ovate; inner 3 narrowly oval. Staminodia 3, short. Ovary ovate. Stigmas 3, bipartite, lobes filiform.—*Udora cordofana*, Hochst. in Flora, 1842, i. Beibl. i. 133.

Nile Land. Cordofan, *Kotschy*, 170!

9. **L. Fischeri,** *Gürke in Engl. Pfl. Ost-Afr. C.* 95. Leaves alternate, linear-lanceolate, with 30–35 teeth on each margin. Stipules intrafoliaceous, very small, lanceolate, entire. Female spathe axillary. Perianth-tube filiform; lobes oblong-elliptical, obtuse. Stigmas 3, bipartite.

Mozamb. Dist. German East Africa: Masai Land, *Fischer*, 616.

10. **L. hydrilloides,** *Rendle in Journ. Linn. Soc.* xxx. 381, *pl.* 32, *figs.* 1–7. Stems nearly 1 lin. diam.; lower internodes 4 lin. long.

Leaves in whorls of 3–5, 10 lin. long, scarcely 1 lin. wide at the base, slightly tapering to the rounded apex, teeth about 100, close-set. Male flowers unknown. Female spathes $2\frac{1}{2}$ lin. long, $\frac{1}{2}$ lin. wide, bifid, minutely spinulose on the free margins, with one perfect and one rudimentary flower. Ovary 1-celled. Ovules 5, orthotropous, on long funicles.

Nile Land. British East Africa: Kariandusi, 6100 ft., *Gregory!*

3. **VALLISNERIA,** Linn.; Benth. et Hook. f. Gen. Pl. iii. 451.

Spathes diœcious. Male shortly pedicellate, many-flowered. Flowers escaping from spathe when mature. Perianth simple, 3-lobed. Stamens 3; anthers with two globose lobes. Female spathe tubular, bifid. Perianth simple, 3-lobed. Staminodes 3. Ovary 1-celled with 3 parietal placentas; stigmas 3, short, broad, 2-fid, ovules many.—Submerged herbs, with very short stem. Leaves crowded, grass-like, linear. Scapes axillary, the female spirally twisted but uncoiling to allow the flower to come to the surface of the water for pollination.

A genus of about 4 species widely distributed through the warmer regions of both hemispheres.

Leaves 4–16 in. long . . . . . 1. *V. spiralis.*
Leaves less than 3 in. long . . . . . 2. *V. æthiopica.*

1. **V. spiralis,** *Linn. Sp. Pl.* 1015. A submerged, grass-like plant. Leaves linear, obtuse, 4–18 in. long, with a few transverse veinlets. Male scapes axillary, 1–2 in. long. Spathe ovate, compressed, 2-lobed. Male flowers numerous in the spathe, very shortly pedicellate. Perianth 3-lobed; lobes obtuse, reflexed. Stamens 3, divergent. Female scape very long, spirally coiled. Spathe tubular, nearly as long as the ovary, bifid. Perianth 3-lobed; lobes shortly triangular, obtuse. Staminodes 3. Stigmas 3, flat, hairy above. Ovary 1-celled. Capsule 2–4 in. long.—Hook. Bot. Misc. iii. 87, tt. 23–24; Niger Flora, 528; Engl. Pfl. Ost-Afr. C. 95.

Upper Guinea. Lagos, *Barter,* 20163!

Nile Land. White Nile, *Schweinfurth,* 1043! Gazelle River, *Schweinfurth,* 1185!

Lower Guinea. Congo: Stanley Pool, *Callenwaert!*

Mozamb. Dist. Lake Nyasa, *Laws,* 2!

Extends through the warm regions of both hemispheres.

2. **V. æthiopica,** *Fenzl in Flora,* 1844, 311 (*nomen*) *and in Sitzb. Akad. Wien, Math.-Nat.* li. (1865) *Abth.* ii. 139. Leaves 2–$2\frac{1}{2}$ in. long, lingulate, attenuate at the base, obtuse or rather acute, more or less denticulate, with obscure transverse veinlets. Female spathe cuneate, 2–3 lin. long, with two obtuse lobes. Perianth longer than the spathe; lobes ovate, very obtuse. Stigmas oval, acutely bidentate at the apex. —Schweinf. Ind. Pl. Nilot. 293; Baker in Trans. Linn. Soc. xxix. 151.

Nile Land. Senaar, *Kotschy,* 284! White Nile near Gebel Nyemat, *Schweinfurth,* 1017! Nile, $14\frac{1}{2}^{\circ}$ N., *Speke and Grant.*

Perhaps only a dwarf state of *V. spiralis,* Linn.

4. **BLYXA,** Du Petit Thouars; Benth. et Hook. f. Gen. Pl. iii. 451.

Spathes cylindrical, male many-flowered, female 1-flowered. Male flower: Calyx 3-lobed. Corolla lobes 3, much longer than the sepals filiform. Stamens 6. Female flower: Calyx with a long tube. Corolla as in the male. Styles 3, filiform. Ovary linear, rostrate, 1-celled, with 3 parietal placentas.—A grass-like submerged herb with creeping stem, rooting at the nodes.

A second species occurs in Tropical Asia, Australia and Mauritius.

1. **B. radicans,** *Ridl. in Journ. Linn. Soc.* xxii. 236, *pl.* 14. Stem creeping, slender, rooting at the nodes. Leaves grass-like, narrowly linear, obtuse, reaching 2 ft. in length, $\frac{1}{8}$ in. wide, dilated at the base into a membranous sheath. Scape slender, 9 in. long, arising from amongst the terminal leaves. Male spathe, 2 in. long, narrowly subcylindrical, slightly dilated at the base. Calyx-tube scarcely longer than the spathe. Sepals slender, ligulate, obtuse, 4–5 lin. long. pale green. Petals 7–8 lin. long, narrow, white. Stamens 6, slender, linear-acuminate. Pistillodia 3, short, dilated at the base. Female spathe similar to the male. Calyx-tube $2\frac{1}{2}$ in. long, exserted from the spathe; lobes 3–4 lin. long, ligulate, obtuse, green. Petals white, very narrow, linear, filiform, 7–8 lin. long. Styles 3, slightly shorter than the petals.

Lower Guinea. Angola: Huilla, *Welwitsch!*

5. **OTTELIA,** Pers.; Benth. et Hook. f. Gen. Pl. iii. 453.

Flowers hermaphrodite. Calyx of 3 oblong or linear lobes. Petals 3, much larger than the calyx-lobes, obovate, yellow or white. Stamens 6–10; filaments flattened; anthers oblong. Ovary oblong, more or less rostrate, more or less completely 6-celled by the intrusion of the placentas; styles 6, linear, 2-fid. Fruit inclosed in the 3–6-winged spathe.—Aquatic herbs with very short stems. Leaves crowded, some submerged, others with long petioles and floating, lanceolate ovate or cordate. Scape elongated.

A genus of about 6 species inhabiting the tropics of both hemispheres.

Leaves cordate at the base . . . . . 1. *O. alismoides.*
Leaves acute at the base.
  Spathe bifid.
    Scape terete . . . . . 2. *O. lancifolia.*
    Scape tetragonal at the apex . . . . . 3. *O. vesiculata.*
  Spathe with about 10 teeth . . . . . 4. *O. plantaginea.*

1. **O. alismoides,** *Pers. Syn.* i. 400. Rootstock perennial. Acaulescent. Leaves with long triquetrous petioles, broadly cordate, obtuse, 7–11-nerved, 4–6 in. wide. Flowers solitary on peduncles 6 in. to 1 ft. long, hermaphrodite. Spathe closely applied to the ovary, 3–6-toothed and winged. Calyx-lobes oblong, 6 lin. long, $1\frac{1}{2}$ lin. wide. Petals 3, broadly ovate, shortly unguiculate, white, 1 in. long. Stamens 6–10;

anthers linear, slightly shorter than the filaments. Ovary oblong, divided more or less completely into 6 cells by the intrusion of the placentas; ovules numerous; styles 6, linear, bifid.—Benth. Flor. Austral. vi. 257; Hook. f. Flor. Brit. Ind. v. 662. *Stratiotes alismoides*, Linn. Sp. Plant. 535; Smith, Exot. Bot. t. 15. *Damasonium indicum*, Willd. Sp. Plant. ii. 276; Roxb. Corom. Pl. t. 185; Bot. Mag. t. 1201.

Nile Land. Cordofan, *Kotschy!*

Mozamb. Dist. W. shore of Lake Nyasa near Raangwa, *Kirk!*

A specimen collected by *Cameron* at Blantyre, British Central Africa, probably belongs to an undescribed species allied to this, but is in too young a state for determination. Also found in Tropical Asia and N. Australia.

2. **O. lancifolia,** *Rich. Flor. Abyss.* ii. 280, *t.* 95. Leaves radical; petiole dilated at the base, subamplexicaul; lamina elliptical-lanceolate, acute, gradually tapering into the petiole below, entire, membranous. Scape 1-flowered, shorter or longer than the leaves. Spathe tubular, compressed, with two opposite wings, shortly bifid. Calyx lobes 3, elliptical-lanceolate, obtuse, green. Petals 3, slightly longer than the calyx-lobes, slightly undulate in the upper half. Fruit ovoid-oblong, enclosed in the persistent spathe.

Nile Land. Abyssinia: Shire, *Quartin Dillon.* Gazelle River, *Schweinfurth*, 1159!

Lower Guinea. Angola: Ambaca, *Welwitsch*, 6466!

Mozamb. Dist. British Central Africa: Blantyre, *Cameron!*

Var. *fluitans*, Ridl. in Journ. Linn. Soc. xxii. 238. Leaves narrower, 1 ft. long, $1\frac{1}{4}$ in. wide, very gradually tapering into the petiole.

Lower Guinea. Angola: Pungo Andongo, *Welwitsch*, 6468!

3. **O. vesiculata,** *Ridl. in Journ. Linn. Soc.* xxii. 237. Acaulescent. Leaves lanceolate, 3–4 in. long, 9 lin. wide; petiole 3 in. long. Scape 3–15 in. long, slightly compressed, slightly winged, a short distance beneath the spathe becoming incrassate and tetragonal with the angles acutely winged. Spathe inflated, broadly ovoid, striped with purple outside, 1 in. long, 7 lin. wide, bidentate at the mouth. Sepals lanceolate, subacute, 4 lin. long. Petals yellow, 6 lin. long. Stamens 6. Styles 7. Ovary incompletely 9-celled.

Lower Guinea. Angola: Huilla, *Welwitsch*, 6497!

4. **O. plantaginea,** *Welw. ex Ridl. in Journ. Linn. Soc.* xxii. 238. Stem short, thick, with numerous rootlets at its base. Leaves ovate, crisped, 4 in. long, $2\frac{1}{2}$ in. wide; petiole $1\frac{1}{2}$ in. long. Scape 10 in. long, flaccid. Spathe saccate, 1 in. long, with very short wings and about 10 short, obtuse teeth. Flowers on short pedicels. Sepals lanceolate, obtuse, 4 lin. long, green, scarious at the margin. Petals 9 lin. long, yellow.

Lower Guinea. Angola: Huilla, *Welwitsch*, 6469!

6. **BOOTTIA,** Wall.; Benth. et Hook. f. Gen. Pl. iii. 453.

Spathes unisexual. Male flowers several in a spathe. Calyx-lobes 3, narrow. Petals 3, obovate-oblong, much larger than the calyx-lobes,

Stamens 6-12; anthers erect, oblong. Pistil rudimentary. Calyx and corolla similar to those of the male. Staminodes small. Ovary produced into a thick beak, more or less perfectly divided into 6 cells by the intrusion of the placentas; styles 6–15, linear-filiform, 2-fid; ovules many.—Aquatic herbs with the habit of *Ottelia*. Spathe with the two lateral ribs prominent.

Species about 8, extending to Burmah.

Male flowers exserted from spathe.
- Leaves 5-nerved . . . . . 1. *B. exserta.*
- Leaves 9-nerved . . . . . 2. *B. Fischeri.*

Male flowers enclosed in spathe.
- Scape and spathe rough . . . . . 3. *B. scabra.*
- Scape and spathe smooth.
  - Leaves ligulate . . . . . 4. *B. crassifolia.*
  - Leaves lanceolate . . . . . 5. *B. abyssinica.*
  - Leaves broadly ovate . . . . . 6. *B. macrantha.*

1. **B. exserta,** *Ridl. in Journ. Linn Soc.* xxii. 240, *pl.* 13. Rhizome very short. Leaves ovate-elliptical, obtuse, 5-nerved, coriaceous, 2½–5 in. long, 1¾–2 in. wide; petiole 9 in. long. Scape not exceeding 10 in. in length. Spathe narrow, 1–2 in. long, subcylindrical, scarcely dilated at the apex, trifid, one side being more deeply cut. Male flowers about 6, exserted from the spathe. Sepals thin, much shorter than the petals. Petals ovate, obtuse, yellow shading into white near the apex. Female flower solitary. Calyx-tube exserted from the spathe; lobes narrow, coriaceous, green, 7 lin. long.

Mozamb. Dist. Portuguese East Africa: Shire River, a few miles above Shamo, *Kirk!* Quilimane, *Scott!*

A specimen in Kew Herbarium, collected in Angola by *Sir H. H. Johnston*, may belong to this species.

2. **B. Fischeri,** *Gürke in Engl. Pfl. Ost-Afr. C.* 95. Leaves ovate, obtuse, narrowed at the base into a thick petiole, fleshy, coriaceous, 9-nerved, crisped at the margin. Male spathe large, ovoid, very thick, glabrous, wingless, many-flowered, teeth very acute. Male flowers exserted a long way from the spathe. Petals yellow.

Nile Land. German East Africa: Ussukuma; Usiha, *Fischer*, 588.

I have seen no specimen of this species, but it appears to be closely related to *B. exserta*, Ridl.

3. **B. scabra,** *Benth. & Hook. f. Gen. Pl.* iii. 454. Leaves submerged, thin, oblanceolate, acute, 1½–2 ft. long, 2½ in. wide; petiole 1 ft. long, expanded at the base into an amplexicaul sheath 1¼ in. wide. Scape 2½ ft. long, rough. Spathe ampullæform, rugose, 3 in. long, 1 in. wide, with 3 teeth, split lower on one side. Sepals lanceolate, 6–9 lin. long, smooth. Petals yellow.—Ridley in Journ. Linn. Soc. xxii. 239; Engl. Pfl. Ost-Afr. C. 95. *Ottelia scabra*, Baker in Trans. Linn. Soc. xxix. 151.

Nile Land. Sides of the Nile, 12° N., *Speke and Grant*, 770½! Gazelle River, *Schweinfurth*, 1121!

4. **B. crassifolia,** *Ridl. in Journ. Linn. Soc.* xxii. 239. Rhizome thick, obliquely descending, densely covered with ovate scales. Leaves ligulate, lorate, obtuse, attenuated into the petiole, fleshy and subcoriaceous, 5–7-nerved, 19 in. long, 2–3 in. wide, crisped at the margin. Scape 15 in. long, smooth. Spathe tubular, slightly swollen at the base, 6-winged; teeth very short and obtuse. Sepals lanceolate, obtuse, 6 lin. long, 3 lin. wide. Petals yellow.

Lower Guinea. Angola; Mumpulla and Lopolla, *Welwitsch*, 6470!

5. **B. abyssinica,** *Ridl. in Journ. Linn. Soc.* xxii. 239. Rhizome thick, submerged, emitting numerous long rootlets. Leaves many, thin, lanceolate, obtuse, 15 in. long, $1\frac{1}{2}$ in. wide, petiolate. Scape thick, fragile, 9 in. long. Spathe oblong-elliptical, scarcely attenuate at the apex, 2 in. long, about $\frac{1}{2}$ in. wide, 2-flowered. Sepals lanceolate, obtuse, coriaceous, 9 lin. long, $1\frac{1}{2}$ lin. wide. Petals yellow, slightly longer than the sepals.

Nile Land. Abyssinia: Zana, *Schimper*, 1452! Gazelle River, *Schweinfurth*, 1159! 1254! Jur Ghattas, *Schweinfurth*, 2423! Madi, *Speke and Grant*, 696!

Speke and Grant's $620\frac{1}{2}$ from the Nile and *Schweinfurth's* 3638 from Monbuttu may prove to be a white-flowered form of this species.

A plant resembling this has been collected by *Barter* at Nupe (910), which in the absence of perfect flowers is not determinable.

6. **B. macrantha,** *Wright.* Leaves broadly ovate, rotundate at the base, 3 in. long, $2\frac{1}{2}$ in. wide, 9-nerved, smooth; petiole 6 in. long, slightly sheathing at the base. Scape thick. Spathe tubular, smooth; teeth 3, triangular, membranous. Sepals ligulate, obtuse, 9 lin. long, 1 lin. wide. Petals $1\frac{3}{4}$ in. long, yellow. Styles 3, bipartite, covered with long papillæ. Male flowers not seen.

Mozamb. Dist. Portuguese East Africa: Quilimane, *Scott!*

This species is at once recognised by the ovate-rotundate leaves and by the flowers being much larger than in any other species.

7. **THALASSIA,** Soland.; Benth. et Hook. f. Gen. Pl. iii. 455.

Dicœcious. Male flower on a long pedicel. Perianth 1-seriate, 3-merous; segments petaloid. Stamens 6; anthers long, subsessile. Rudiment of ovary none. Female flower at length stipitate. Ovary with a long beak. Fruit stipitate, globose. Seeds many on parietal placentas.—Submerged marine plants. Rhizome long creeping, annulate. Leaves ligulate. Scapes of both sexes similar.

A genus of two species, one in the Red Sea and India, the other in the West Indies.

1. **T. Hemprichii,** *Ehrb. ex Aschers. in Boiss. Flor. Orient.* v. 7. Rhizome creeping, with numerous annular scars. Leaves fascicled at intervals, linear, obtuse, 6 in. long, 3 lin. wide. Flowers solitary in diphyllous, axillary (?) spathes. Stamens 6. — Engl. Pfl. Ost-Afr.

C. 95. *Schizotheca Hemprichii*, Solms Laub. in Schweinf. Beitr. Æthiop. 194 and 246.

Nile Land. Suakin, *Schweinfurth*, 196! Arakea, near Suakin, *Schweinfurth*, 186! Massowa, *Ehrenberg!*

Shores of Tropical Asia.

8. **HALOPHILA,** Du Petit Thouars; Benth. et Hook. f. iii. 455.

Male flower solitary, pedicellate. Perianth 1-seriate, 3-merous. Anthers 3, subsessile, oblong-linear, alternate with the perianth-segments, extrorse. Rudiment of ovary none. Female flower sessile in the spathe. Perianth-segments 3, minute. Ovary with a long beak, 1-celled; styles 3, simple, filiform, minutely papillose; ovules 2-seriate on 3 parietal placentas. Fruit sub-globose, included in the spathe, beak exserted. Seeds many, subglobose, with a membranous testa.—Submerged, marine herbs. Rhizome creeping, rooting at the nodes. Leaves oval or linear, surrounded by scales at the base. Spathes small, solitary and sessile amongst the leaves.

A genus of about 6 species extending from Florida and the South Pacific to Malaya and Australia.

Leaves ovate	1. *H. ovata.*
Leaves linear	2. *H. stipulacea.*

1. **H. ovata,** *Gaud. in Freycin. Voy. Bot.* 430, *t.* 40, *fig.* 1. A small marine herb growing just above low-water mark. Rhizome creeping. Leaves 2 from each node, ovate, entire, 1 in. long, 4–5 lin. wide; petiole $\frac{3}{4}$–1 in. long, with several sheathing scales at the base.—*Halophila ovalis*, Hook. f. Flor. Tasm. ii. 45; Ascherson in Nuovo Giorn. Bot. Ital. iii. 301; Balf. f. in Trans. Bot. Soc. Edin. xiii. 290; Engl. Pfl. Ost-Afr. C. 94. *Caulinia ovalis*, R. Br. Prod. 339.

Nile Land. Suakin, *Schweinfurth*, 199!

Mozamb. Dist. Island of Zanzibar (ex *Engler*).

Tropical Asia, Australia, and Pacific Islands.

2. **H. stipulacea,** *Aschers. in Sitzungsber. Ges. Naturf. Fr. Berlin*, 1867, 3. Marine herb with creeping rhizome growing below low-water mark. Leaves two from each node, linear, 2 in. long, 3 lin. wide; petiole 3 lin. long. Scales 2 from each node, one sheathing the internode, the other the bases of the leaves, membranous, white, obtuse, 6 lin. long.—Balf. f. in Trans. Bot. Soc. Edin. xiii. 290; Engl. Pfl. Ost-Afr. C. 94. *Zostera stipulacea*, Forsk. Flor. Ægypt. Arab. 158.

Nile Land. Suakin, *Pullen!*

Mozamb. Dist. German East Africa: Coast region near Lamu (ex *Engler*).

ORDER CXXXII. **BURMANNIACEÆ.** (By C. H. Wright.)

Flowers regular, hermaphrodite. Perianth superior, corolline, with a longer or shorter (sometimes winged) tube; lobes 6 or 3, the outer larger. Stamens 3, affixed to the perianth-tube. Ovary inferior 1- or 3-celled; style filiform; stigma capitate. Ovules very many. Fruit

capsular, crowned by the persistent part of the perianth-tube, dehiscing by slits.—Slender colourless herbs. Stems simple. Leaves (in the tropical African genera) reduced to minute scales. Inflorescence terminal, cymose.

An order containing about 50 species dispersed through the tropics of both hemispheres.

Perianth-tube winged. Ovary 3-celled	1. BURMANNIA.
Perianth-tube not winged. Ovary 1-celled	2. GYMNOSIPHON.

1. **BURMANNIA,** Linn.; Benth. et Hook. f. Gen. Pl. iii. 457.

Perianth-tube with 3 prominent wings; 3 outer lobes induplicato-valvate, 3 inner small. Anthers 3, subsessile in the tube below the inner perianth-lobes; connective produced above the cells. Ovary 3-celled, with axile placentation; ovules very numerous; style included, shortly 3-lobed. Capsule with 3 wings, dehiscing by slits between the wings. Seeds small; testa reticulate or striate.—Erect herbs. Stem simple. Leaves reduced to small scales. Cymes terminal.

Species about 20, spread through the tropics of both hemispheres.

1. **B. bicolor,** var. **africana,** *Ridl. in Journ. Bot.* 1887, 85. Stem erect, thin, wiry, 2–3 in. high Leaves few, lanceolate, acute, the lower 3 lin. long. Inflorescence cymose, 1–7-flowered. Perianth-tube violet, with 3 wings narrower at the base, giving an obcordate outline; outer lobes 3, yellow keeled with purple, inner linear-lanceolate, pale yellow. Stamens 3, inserted at the middle of the perianth-tube; anthers with 2 distinct, subglobose cells. Ovary 3-celled, many-ovuled; style filiform; stigma capitate.

Lower Guinea. Angola: Huilla, *Welwitsch,* 6474! *Johnston!*
Mozamb. Dist. Lower Plateau north of Lake Nyasa, *Thomson!*

B. africana, J. Braun and Schum. in Mitth. Deutsch. Schutzgeb. 1889, p. 162, from the Cameroons, is mentioned without description.

2. **GYMNOSIPHON,** Blume; Benth. et Hook. f. Gen. Pl. iii. 458.

Perianth-tube elongated, not winged, circumscissile a short distance above the ovary; limb with the 3 outer lobes wide, induplicato-valvate, the 3 inner small or wanting. Anthers 3, subsessile near the throat of the perianth, with 4 globose cells. Ovary inferior, 1-celled; placentas 3 parietal, sometimes bifid. Ovules very numerous. Capsule globose, crowned by the persistent base of the perianth-tube. Seeds very small; testa inappendiculate.—Weak annual herbs, sometimes hyaline. Stem erect, usually simple. Leaves reduced to small scales. Flowers small in terminal, lax or congested cymes.

Species about 12, inhabiting principally the Malayan Archipelago, a few extending to Tropical America.

Cymes lax.
Outer perianth-segments 3-lobed; inner minute . . 1. *G. usambaricus.*
Outer perianth-segments entire; inner absent . . . 2. *G. squamatus.*
Cymes dense, subcapitate . . . . . 3. *G. congestus.*

1. **G. usambaricus,** *Engl. Bot. Jahrb.* xx. 138, *t.* 5, *figs. A.–L.* Stem decumbent at the base, slender, 6 in. high. Leaves scale-like, narrower than the stem, the lower lanceolate, the upper oblong, rather obtuse. Cyme terminal, bifid, 5–9-flowered; lateral branches longer than the first flower. Perianth-tube cylindrical, with 6 glands on the outside near the top of the ovary; outer lobes 3, rather shorter than the tube, 3-lobed, induplicato-valvate; inner lobes 3, minute, ovate. Anthers subsessile on the perianth-tube opposite the inner lobes, with 4 globose cells. Ovary 1-celled, with 3 bilobed, many-ovuled placentas; style as long as the perianth-tube; stigma large, 3-lobed.—Engl. Pfl. Ost-Afr. C. 151. *Dictyostegia usambarica*, Engl. in Abhandl. Berl. Akad. Wiss. 1894, 45 (nomen).

Mozamb. Dist. German East Africa: Usambara, *Holst,* 2478.

2. **G. squamatus,** *Wright.* A very slender herb, 2–4 in. high. Leaves very few, reduced to ovate scales rather broader than the stem. Cyme terminal, bifid. Perianth-tube cylindrical, 1½ lin. long; limb with 3 entire ovate lobes; inner lobes none. Anthers 3, subsessile on the throat of the perianth. Ovary 1-celled, with 3 many-ovuled parietal placentas; style as long as the perianth-tube; stigma 3-lobed.

Upper Guinea. Cameroons: Efulen, *Bates,* 311!

Lower Guinea. Gaboon: Sibange Farm, *Soyaux,* 167! 168!

3. **G. congestus,** *Wright.* Stem slender, simple, about 2½ in. high. Scale-leaves few, ovate, acuminate. Cyme congested, subcapitate, about 7-flowered. Perianth-lobes 3, oblong, acute; inner lobes none. Stamens 3, alternate with the perianth-lobes; anthers with 4 globose cells; connective without appendage. Ovary 1-celled, with 3 parietal placentas.

Upper Guinea. Niger Territory: River Nun, *Mann,* 515 partly! Cameroons: Efulen, *Bates,* 370!

Dictyostegia longistyla, Benth. in Hook. Niger Flora, 528, collected on the River Nun by *Vogel* and *Mann*, closely resembles *Gymnosiphon,* but in the absence of perfect flowers must remain doubtful.

ORDER CXXXIII. ORCHIDEÆ. (By R. A. Rolfe.)

Perianth superior, irregular, of six free or variously combined segments. Sepals equal, or the dorsal one (ventral if the flower is not reversed) different; the lateral ones sometimes united with each other or with the foot of the column, forming a sac- or spur-shaped base, called the mentum. Petals usually free, the lateral ones often more or less different from the sepals, the ventral one (dorsal if the flower is not reversed) called the lip, very different, entire or variously lobed, the

so-called disc or central part usually bearing crests or appendages, and the base sometimes extended into a sac or spur. Stamens and style united into a central column which faces the lip. Anther (in the African genera) solitary, on the top or back of the column, and more or less adnate to it, 2- or 4-celled. Pollen-grains cohering in 2–8 globose or club-shaped, waxy or granular masses, called pollinia, which are free or cohere in pairs or fours or altogether by a viscid appendage, and sometimes attached to a distinct stipes and gland. Ovary inferior, 1–celled with parietal placentas in the African genera, undeveloped at flowering-time. Stigma either consisting of a viscid surface near the top of the concave side of the column or two-lobed and lateral; in the former case it faces the lip, and is usually separated from the anther, below which it lies, by an appendage called the rostellum. Seeds very numerous, minute, fusiform; testa loose, reticulated, enclosing a homogeneous embryo.—Herbs of various habit, or rarely shrubby; in many cases terrestrial, with tuberous roots or perennial creeping rhizomes, annual herbaceous stems and solitary spicate or racemose flowers, or in other cases epiphytal, with perennial stems or branches, variously thickened and forming pseudobulbs, upon which the leaves and flowers are borne, or the latter sometimes produced below them. Leaves alternate, simple, entire, coriaceous or membranous. Inflorescence terminal, basal or axillary, spicate, racemose or paniculate, sometimes single-flowered.

The largest order among monocotyledons, the species now known being estimated at over five thousand. They are found throughout the globe, except in the highest latitudes and altitudes, and the more remote oceanic islands. The epiphytic species are for the most part confined to the intertropical zone, within which they are most numerous in the mountains of Tropical Asia and America; in Tropical Africa, however, the majority of the species are terrestrial.

Pollinia waxy.	
Anther 2-celled; pollinia 2–8, united by a viscid appendage, free from the rostellum . .	Tribe 1. EPIDENDREÆ.
Pollinia 4, sometimes cohering in pairs.	
Column not produced into a foot at the base; lip continuous with the base of the column; flowers with spreading perianth segments	Subtribe i. MALAXEÆ.
Column produced into a foot at the base; lip articulated to the foot of the column; flowers with erect or subconnivent perianth segments	Subtribe ii. DENDROBIEÆ.
Pollinia 8.	
Column produced into a very short foot at the base; lip attached to the foot of the column; subsaccate at the base . .	Subtribe iii. ERIEÆ.
Column footless; lip inserted at the base of the column, and either convolute round it or more or less adnate to it; its base produced into a slender spur . .	Subtribe iv. BLETIEÆ.
Anther cells usually confluent; pollinia 2 or 4, attached singly or in pairs to a stipes and gland (a process of the rostellum), with which they are carried away upon removal . .	Tribe 2. VANDEÆ.

Leaves nerved and plicate.
Lip spurred or saccate at the base . . Subtribe v. EULOPHIEÆ.
Lip not spurred or saccate at the base . . Subtribe vi. CYMBIDIEÆ.
Leaves coriaceous, conduplicate at the base . Subtribe vii. SARCANTHEÆ.
Pollinia granular or powdery.
Pollinia free or with apical caudicle and gland; anther case operculate or erect and persistent Tribe 3. NEOTTIEÆ.
Tall climbers . . . . . Subtribe viii. VANILLEÆ.
Terrestrial herbs.
Anther erect or suberect; rostellum elongate.
Stems tall, leafy; leaves plicate; flowers in a terminal panicle . . . . Subtribe ix. CORYMBIEÆ.
Stems dwarf; leaves membranous; flowers in erect spikes . . . . Subtribe x. SPIRANTHEÆ.
Anther incumbent or suberect; rostellum short or nearly obsolete.
Stems from an underground tuber; leaves radical; flowers in leafless scapes, usually borne in advance of the leaves Subtribe xi. ARETHUSEÆ.
Stems erect, leafy, from an underground rootstock; flowers in terminal racemes Subtribe xii. LIMODOREÆ.
Pollinia with basal caudicle and gland; anther cells adnate to the column, and persistent, often continuous with the rostellum . . . . Tribe 4. OPHRYDEÆ.
Anther erect . . . . . Subtribe xiii. HABENARIEÆ.
Anther more or less reflexed from the back of the column.
Dorsal sepal and petals not cohering; rostellum small . . . . Subtribe xiv. DISEÆ.
Dorsal sepal and petals cohering into a hood; rostellum greatly developed into a shield-like process over the anther . Subtribe xv. CORYCIEÆ.

Key to the Genera.

Subtribe i. MALAXEÆ.

Lip superior.
Leaves distichous, sessile, equitant or rarely terete 1. OBERONIA.
Leaves scattered, petiolate, blade ovate to oblong . 2. MICROSTYLIS.
Lip inferior.
Anther cells widely diverging, lateral . . . 3. ORESTIA.
Anther cells parallel . . . . . 4. LIPARIS.

Subtribe ii. DENDROBIEÆ.

Flowers attached to a cylindrical, sometimes thickened rhachis; bracts scattered or subdistichous; sepals subequal . . . . . 5. BULBOPHYLLUM.
Flowers and bracts arranged on either side of a dilated and often flattened rhachis; lateral sepals shorter than the curved dorsal one; base broad; apex falcate or reflexed . . . . . 6. MEGACLINIUM.

Subtribe iii. ERIEÆ . . . . . 7. ANCISTROCHILUS.

Subtribe iv. BLETIEÆ.

Lip free from the column and convolute round it, subentire . . . . . 8. PHAIUS.
Lip adnate to the column, its limb flat or reflexed, and 3- to 4-lobed . . . . . 9. CALANTHE.

Subtribe v. EULOPHIEÆ.

Lip more or less saccate or calcarate, often attached to the more or less produced foot of the column.
Sepals and petals equal or subequal, subconnivent, or the sepals seldom reflexed; petals usually very similar to the sepals in colour . . 10. EULOPHIA.
Sepals generally strongly reflexed; petals much larger, erect or suberect, usually differently coloured from the sepals . . . . 11. LISSOCHILUS.
Lip sessile at the base of the very short footless column, neither saccate nor calcarate . . 12. PTEROGLOSSASPIS.

Subtribe vi. CYMBIDIEÆ.

Lip inferior; sepals and petals subequal.
Flowers in a loose raceme or panicle, over 1 in. diam.; lip 3-lobed . . . . . 13. ANSELLIA.
Flowers in a short congested raceme, under 1 in. diam.; lip entire . . . . . 14. NEOBENTHAMIA.
Lip superior; sepals and petals unequal . . . 15. POLYSTACHYA.

Subtribe vii. SARCANTHEÆ.

Pollinia with a single stipes and gland.
Spur saccate, usually shorter than the sepals and petals; side lobes of the lip distinct and broadly rounded. . . . . 16. SACCOLABIUM.
Spur usually variously calcarate, often very long; side lobes of the lip usually obsolete . . 17. ANGRÆCUM.
Pollinia with two distinct stipes; gland simple or divided.
Stipes of pollinia attached to a single gland . . 18. LISTROSTACHYS.
Stipes of pollinia attached to two distinct glands . 19. MYSTACIDIUM.

Subtribe viii. VANILLEÆ . . . . . 20. VANILLA.

Subtribe ix. CORYMBIEÆ . . . . . 21. CORYMBIS.

Subtribe x. SPIRANTHEÆ.

Front lobe of the lip attached to the sac by a narrow claw.
Sepals free; column unappendaged . . . 22. ZEUXINE.
Sepals connate to the middle into a tube; column with two linear arms as long as the rostellum 23. CHEIROSTYLIS.
Front lobe of the lip sessile on the sac.
Sepals free or nearly so.
Column short and stout, with two crest-like appendages in front . . . . . 24. HETÆRIA.
Column elongate and clavate, unappendaged in front . . . . . 25. PLATYLEPIS.
Sepals connate to beyond the middle into a narrow tube . . . . . 26. MANNIELLIA.

Subtribe xi. ARETHUSEÆ.

Lip without spur or sac . . . . . 27. POGONIA.
Lip saccate or shortly calcarate . . . . 28. EPIPOGUM.

Subtribe xii. LIMODOREÆ . . . . . 29. EPIPACTIS.

Subtribe xiii. HABENARIEÆ.

Middle lobe of the rostellum tooth-like, subulate or broader below, flat and distinct from the side lobes, or obsolete.
Sepals subequal and more or less connivent.
Lip ecalcarate . . . . . 30. STENOGLOTTIS.
Lip variously calcarate.
Petals more or less exceeding the sepals.
Lip slightly adnate to the column; scape without sheaths . . . . 31. HOLOTHRIX.
Lip deeply adnate to the column; scape with numerous lanceolate sheaths . 32. DERŒMERIA.
Petals equalling, or shorter than the sepals . 33. PERISTYLUS.
Sepals unequal, the lateral ones more or less spreading.
Lip concave or subsaccate at the base . . 34. BRACHYCORYTHIS.
Lip variously calcarate.
Stigmas sessile or subsessile, confluent or more or less distinct.
Anther sessile . . . . . 35. PLATANTHERA.
Anther long-stalked . . . . 36. PODANDRIA.
Stigmas more or less distinctly stalked, and very rarely confluent.
Anther-cells produced into long channels; stigmas produced in front only . . 37. HABENARIA.
Anther-cells obtuse in front, without channels; stigmas produced behind into a pair of tooth-like processes . . 38. RŒPEROCHARIS.
Middle lobe of the rostellum more or less concave or complicate, usually broader, more or less united to the side lobes and galeate.
Lip inferior (flower reversed, as is usual in the order).
Stigmatic processes very long, and partly adnate to the stalk of the lip . . . . 39. BONATEA.
Stigmatic processes not adnate to the lip, usually short.
Lip narrow, simple or with narrow lobes . 40. PLATYCORYNE.
Lip broad, variously 3- or 4-lobed . . 41. CYNORCHIS.
Lip superior (flower not reversed) . . . 42. AMPHORCHIS.

Subtribe xiv. DISEÆ.

Lip superior, 2-saccate or calcarate at the base . . 43. SATYRIUM.
Lip inferior, neither saccate nor calcarate.
Petals free from the dorsal sepal . . . . 44. DISA.
Petals adherent to the dorsal sepal . . . 45. BROWNLEEA.

Subtribe xv. CORYCIEÆ . . . . . 46. DISPERIS.

1. **OBERONIA,** Lindl.; Benth. et Hook. f. Gen. Pl. iii. 494.

Sepals free, subequal, spreading or deflexed. Petals mostly smaller. Lip superior, sessile, entire or 2–4-lobed. Column very short; anther terminal, incumbent; pollinia 4, cohering by a viscid appendage.—Tufted epiphytes, without pseudobulbs. Leaves distichous, equitant, ensiform or very rarely terete. Flowers very minute, in dense subcylindrical spikes or racemes.

A genus of about sixty species, of which the majority are Indian and Malayan, with one in Japan, two or three others in Australia and Polynesia, and one in the Mascarene Islands.

1. **O. brevifolia,** *Lindl. Gen. & Sp. Orch.* 16. Stem leafy, 1–3 in. long. Leaves closely imbricate, ovate or oblong. Spikes generally about as long as the stem, slender, usually drooping. Bracts lanceolate, acuminate, serrulate, loosely investing the pedicel and ovary, $\frac{1}{2}$ lin. long. Sepals broadly ovate. Petals linear. Lip slightly embracing the column, hollowed at the base, usually bilobed at the apex. Capsule ovoid, with three prominent ribs, and three alternating smaller ones, $1\frac{1}{2}$ lin. long.—Lindl. Fol. Orch., Oberon. 6; Engl. Veg. Usamb. in Abhandl. d. K. Preuss. Akad. zu Berlin, 1894, reprint, p. 47; Kränzl. in Engl. Pfl. Ost-Afr. C. 154.

Mozamb. Dist. German East Africa; Usambara; Nderema, 2900–3200 ft. (ex *Kränzlin*).

Widely diffused in the Mascarene Islands. I have not seen African specimens, unless the succeeding belongs here.

2. **O. sp.,** *Rolfe in Bolet. Soc. Brot.* ix. 138. Caulescent, 2 in. high. Leaves ensiform, 8–10 lin. long. Scape $\frac{3}{4}$ in. high. Bracts linear-lanceolate, acute, $\frac{3}{4}$ lin. long. Capsule subglobose, shortly pedicelled.

Lower Guinea. Island of St. Thomas, *Quintas,* 11!

Resembles the preceding in habit, and may be a dwarfed state of it, but this must remain uncertain until flowers are known.

2. **MICROSTYLIS,** Nutt.; Benth. et Hook. f. Gen. Pl. iii. 494.

Sepals free, subequal, spreading. Petals equalling the sepals, but usually narrower, sometimes filiform. Lip superior, sessile, erect or spreading, shorter than the petals, often very broad, entire, 2–3-lobed or fimbriate-dentate; base cordate or extending into elongated auricles, which clasp the column. Column very short, terete, with short spreading arms; anther subterminal; pollinia 4.—Terrestrial or epiphytic herbs, with or without pseudobulbs. Leaves one to three, continuous with their sheath, membranous. Flowers small, often minute, in lax or dense spikes, occasionally subumbellate. Bracts small, narrow.

A genus of about seventy species, most abundant in Tropical Asia and America, with one widely diffused through the north temperate zone, three or four others in

Polynesia, and one in Australia. Besides the two species here enumerated, there is another African one in the Comoro Islands.

Flowers yellow; lip cuneate, emarginate . . . . 1. *M. prorepens.*
Flowers purple; lip obcordate-orbicular . . . . . 2. *M. stelidostachya.*

1. **M. prorepens,** *Kränzl. in Engl. Jahrb.* xvii. 48. Rhizome creeping; flowering stems bearing sheaths, increasing in size upwards, above them 3-leaved. Leaves ovate-oblong, acute, shortly petioled. Scapes bearing a few narrowly linear, acuminate sheaths; spikes congested, many-flowered. Bracts ovate, very acuminate, almost equalling the ovary. Flowers minute, yellow. Dorsal sepal ligulate, acute; lateral ones ovate-oblong, subacute, broader than the dorsal. Petals linear from an ovate base, acute, equalling the sepals. Lip cuneate, emarginate; base embracing the short column; disc bearing a pilose cushion.

Upper Guinea. Sierra Leone; Sugarloaf Mountain, near Freetown; on wet rocks, *Preuss.*

Only known to me from the original description.

2. **M. stelidostachya,** *Reichb. f. Otia Bot. Hamb.* ii. 118. Stems somewhat tufted, suberect, 2–3½ in. high, bearing several loose sheaths, diphyllous. Leaves ovate, subacute, 1¼–2½ in. long, ¾–1½ in. broad. Scapes 5–8 in. high, many-flowered. Bracts triangular-ovate, acuminate, ¾ to 1 lin. long. Dorsal sepal oblong, obtuse, 1½ lin. long; lateral ones ovate-oblong, obtuse, a little shorter than the dorsal one. Petals linear-lanceolate, acute, 1¼ lin. long. Lip broadly obcordate-orbicular, 1¼ lin. long; apical lobes rounded, entire; disc with a pair of small scabrid or minutely tuberculate areas near the base, and outside the three central, scarcely thickened nerves. Column ⅓ lin. long.—Ridl. in Journ. Linn. Soc. xxiv. 347.

Lower Guinea. Princes Island, *Mann*, 1151!

The flowers are purplish in the dried state.

3. **ORESTIA,** Ridl. in Journ. Linn. Soc. xxiv. 197.

Sepals spreading, free, the central ones falcate. Petals spreading, narrower than the sepals. Lip inferior, shorter than the sepals, broadly obovate, pulvinate in the centre. Column elongate, terete, incurved, slightly narrowed upwards; anther terminal, with very short filament, adnate to the rostellum; cells widely diverging and lateral, dehiscing early; pollinia 2 in each cell, inappendiculate, elliptical, curved, waxy, yellow. Stigma deeply concave. Rostellum thin, nearly truncate, diverging laterally into a broad lobe on either side.—A terrestrial herb, with slender erect stem. Leaves 2, membranous, continuous with the sheath. Flowers small, in a lax raceme. Bracts small and narrow.

A very remarkable endemic monotype, with the habit and general appearance of some *Microstylis* or *Liparis*, but remarkably different in the structure of the column. Mr. Ridley refers it to *Neottieæ*, with which, however, I am unable to trace any affinity. At first I suspected it might be an abnormal state of some *Liparis*.

1. **O. elegans,** *Ridl. in Journ. Linn. Soc.* xxiv. 198, *t.* 6. Stems 3 in. high, slender, 2–3-leaved. Leaves ovate or lanceolate-ovate, acute 2½–3 in. long, 1–1¼ in. broad; margin undulate. Scapes 5–6 in. long. Raceme lax, many-flowered. Bracts ovate, acuminate, 1–1½ lin. long. Sepals ovate-oblong; lateral ones falcate, 1½ lin. long. Lip nearly quadrate, emarginate, with large rounded auricles, 1 lin. long; disc with a small purple pubescent cushion in the centre. Column ½ lin. long.—Ridl. in Bolet. Soc. Brot. v. 201 (*Orestias* by error).

Lower Guinea. Island of St. Thomas: between Lagoa Amelia and San Pedro, 4000 ft., *Moller,* 94!

In habit much resembles *Microstylis stelidostachya,* Reichb. f.

4. **LIPARIS,** Rich.; Benth. et Hook. f. Gen. Pl. iii. 495.

Sepals spreading, free, or the lateral ones sometimes more or less connate, often falcate and broader than the dorsal. Petals usually very narrow. Lip inferior, adnate to the base of the column, usually deflexed or recurved above the erect base, entire, often bituberculate at the base. Column usually long and slender, incurved, margined or winged at the apex; anther terminal; pollinia 4, free or cohering by a viscid appendage.—Terrestrial or epiphytic herbs, with or without pseudobulbs. Leaves one or more, membranous and continuous with the sheath, or somewhat coriaceous and jointed on the sheath or pseudobulb. Flowers small or medium-sized, in lax or dense racemes. Bracts small or narrow.

A genus of about 120 species, found throughout the warm and temperate regions of the globe, but most numerous in India. All the African species belong to the section *Molliifoliæ.*

Leaves 3–6 in. long.
  Lip broadest near the apex.
    Lip obcordately bilobed.
      Leaves ovate lanceolate; apex attenuate or subacute — 1. *L. rufina.*
      Leaves broadly elliptical; apex subobtuse . . — 2. *L. guineensis.*
    Lip broadly orbicular-ovate . . . . . — 3. *L. ruwenzoriensis.*
  Lip as broad or broader near the base than the apex.
    Lip linguiform with broad base . . . . — 4. *L. abyssinica.*
    Lip broadly elliptical-oblong . . . . . — 5. *L. Bowkeri.*
Leaves 1–2 in. long, or rarely longer.
  Stems not pseudobulbous at the base.
    Leaves ovate-lanceolate . . . . . — 6. *L. gracilis.*
    Leaves broadly ovate . . . . . — 7. *L. Welwitschii.*
  Stems with ovoid-globose pseudobulbous base . . . — 8. *L. capensis?*
Leaves ½ in. long . . . . . — 9. *L. Guingangæ.*

1. **L. rufina,** *Reichb. f. Mss.* Pseudobulbs ovoid, ¾–1¼ in. long, usually triphyllous. Leaves lanceolate or oblong-lanceolate, subacute, narrowed above the sheathing base, 4–8 in. long, ¾–1¼ in. broad. Scapes ¾–1¼ ft. high, many-flowered. Bracts ovate-lanceolate, subacute, 1½–3 in. long. Dorsal sepal oblong-lanceolate, subobtuse, 2½ in. long; lateral ones falcate-oblong, obtuse, 2 lin. long. Petals falcate-

linear, obtuse, 2¼ lin. long. Lip broadly obcordate, crenulate, shortly unguiculate, somewhat fleshy, 1¾ lin. long and the same broad; base bituberculate. Column 1 lin. long.—*L. elata* var. *rufina*, Ridl. in Journ. Linn. Soc. xxii. 260.

Upper Guinea. Sierra Leone, *Afzelius! Morson!* Sugarloaf Mountain, *Wilford! Scott-Elliot*, 3957! Lagos, *Barter*, 20202! Niger Delta: Nun River, on mangroves, *Barter*, 20122!

Closely allied to the Tropical American *L. elata*, Lindl., of which Ridley makes it a variety, but differs in its proportionately shorter, crenulate and rather more fleshy lip. It is also near the Indian *L. bituberculata*, Lindl. Barter notes the flowers as "deep red," but a plant from Mr. Scott-Elliot, which flowered at Kew, had green sepals and petals and a dull purple lip. Ridley refers Wilford's specimens to the following species, but both flowers and leaves agree with the present one.

2. **L. guineensis,** *Lindl. Bot. Reg. t.* 1671. Pseudobulbs oblong or sometimes hardly developed, 4–5-leaved. Leaves elliptical or ovate-oblong, subobtuse or apiculate, blade 3–7 in. long, 1–3 in. broad: petiole 1½–3 in. long. Scapes ½–1 ft. long. Bracts lanceolate, subacute, 1–2 lin. long. Dorsal sepal linear-oblong, obtuse, 1½ lin. long. Petals linear, 1¾ lin. long. Lip obcordate, shortly unguiculate, minutely crenulate, 1½ lin. long; base bituberculate. Column ¾ lin. long.—Ridl. in Journ. Linn. Soc. xxii. 260; Rolfe in Bolet. Soc. Brot. vii. 236; ix. 136.

Upper Guinea. Sierra Leone, *Whitfield!*

Lower Guinea. Princes Island, *Barter*, 1980! *Quintas*, 8!

Whitfield's original specimen from Sierra Leone has green flowers, but Barter's from Princes Island are marked "Flowers purple," yet I fail to distinguish them.

3. **L. ruwenzoriensis,** *Rolfe.* Leaves elliptical-oblong, subacute or obtuse, base attenuate into a short petiole, 2½–4 in. long, ¾–1¼ in. broad; petioles 1–1½ in. long. Scape 8–9 in. high; raceme 3–4 in. long. Bracts lanceolate to ovate-lanceolate, acuminate, 3–5 lin. long. Pedicels 4–5 lin. long. Dorsal sepal oblong-linear, subobtuse, 2½–3 lin. long; lateral ones falcate-oblong, obtuse, 2 lin. long. Petals linear, subobtuse, 3 lin. long. Lip broadly orbicular-obovate, obtuse or truncate, 2½–3 lin. broad, very shortly unguiculate; base bituberculate. Column 1½ lin. long, rather stout.—*L. guineensis*, Rendle in Journ. Bot. 1895, 298 (not Lindl.).

Nile Land. British East Africa: Ruwenzori; Butagu, 9000 ft., *Scott-Elliot*, 8056!

Quite distinct from *L. guineensis*, Lindl., to which it has been referred. Fruiting specimens from between Kondowa and Karonga, on the west of Lake Nyasa, *Whyte!* apparently represent this or an allied species.

4. **L. abyssinica,** *A. Rich. Tent. Fl. Abyss.* ii. 281. Pseudobulbs covered with loose sheaths, 2–3-leaved. Leaves oval or oval-oblong, acute, flat, with sheathing base. Scapes few-flowered. Bracts oval-lanceolate, acute, equalling the ovary. Flowers purple. Dorsal sepal lanceolate, subobtuse; lateral ones half oval, obtuse, united to above the middle. Petals linear. Lip with broad semicanaliculate base, linguiform, obtuse, entire and fleshy above, carunculate above the

base.—Ridl. in Journ. Linn. Soc. xxii. 265. *Sturmia abyssinica*, Reichb. f. in Walp. Ann. iii. 527.

Nile Land. Abyssinia: Mt. Sholoda, near Adowa, *Quartin Dillon.*

Only known to me from the original description. The author compares it with the Mauritian *L. purpurascens*, Lindl., and the South Indian *L. alata*, A. Rich, remarking that the leaves are not undulate as in the former, and the rhachis not winged nor the lateral sepals free as in the latter.

5. **L. Bowkeri,** *Harv. Thes. Cap.* ii. 6, *t.* 109. Stems covered with the loose sheathing bases of the leaves, 1–3 in. high, 2–3-leaved. Leaves broadly ovate or elliptical-oblong, obtuse, petiolate; blade $1\frac{1}{2}$–4 in. long, 1–$2\frac{1}{2}$ in. broad. Scapes 3–5 in. long; racemes lax. Bracts ovate or lanceolate-ovate, acuminate, 3–5 lin. long. Dorsal sepal lanceolate-linear, obtuse, 4–5 lin. long; lateral ones falcate-oblong, obtuse, 3–4 lin. long. Petals elongate-linear, very narrow, 5–6 lin. long. Lip broadly elliptical-oblong, obtuse, shortly unguiculate; margin slightly undulate, equalling the lateral sepals; base bituberculate. Column slender, 2 lin. long; wings rounded, obtuse.—Ridl. in Journ. Linn. Soc. xxii. 270; Kränzl. in Engl. Pfl. Ost-Afr. C. 154.

Mozamb. Dist. German East Africa: Kilimanjaro; Marangu, 6000–6500 ft., *Volkens*, 2094! British Central Africa: Nyasaland, *Buchanan*, 698!

Found also in extra-tropical South-east Africa.

6. **L. gracilis,** *Rolfe in Bolet. Soc. Brot.* ix. 138. Rhizomes slender, creeping. Stems slender, erect, $\frac{1}{2}$–$1\frac{1}{2}$ in. high, 2–3-leaved. Leaves lanceolate to ovate, narrowed at the base into a short sheathing petiole, limb $\frac{3}{4}$–$1\frac{1}{2}$ in. long, 3–5 lin. broad. Scapes $2\frac{1}{2}$ in. high; raceme lax, few-flowered. Bracts lanceolate-ovate, acute, 1 lin. long. Pedicels 4 lin. long. Dorsal sepal lanceolate-linear, obtuse, 3 lin. long; lateral ones united nearly to the apex in a suborbicular body, 2 lin. long. Petals narrowly falcate-linear, obtuse, a little longer than the sepals. Lip reniform-ovate, 2 lin. long, 3 lin. broad, with three inconspicuous keels in the middle; base bituberculate. Column slender, with short, broad, obtuse wings.

Lower Guinea. Island of St. Thomas, *Quintas*, 9!

Allied to the preceding, but a smaller, more slender plant in every respect.

7. **L. Welwitschii,** *Reichb. f. in Flora*, 1865, 184. Rhizome creeping. Stems erect, slender, 3 in. high, 3–4-leaved. Leaves ovate, subobtuse, petiolate, blade 1–$1\frac{1}{2}$ in. long, $\frac{3}{4}$–$1\frac{1}{4}$ in. broad; petioles $\frac{1}{2}$–$\frac{3}{4}$ in. long, with narrow, sheathing base. Racemes dense, peduncled, about 2 in. long. Flowers very small, dark purple; lip with white margin. Dorsal sepal ovate-lanceolate; lateral ones ovate-oblong, much broader. Petals linear, obtuse. Lip short, cordate, obtuse, rather fleshy, without basal calli, about equalling the lateral sepals. Column semiterete, slightly curved, without wings. Capsule elliptical-oblong, shortly stalked, 2–3 lin. long.—Ridl. in Journ. Linn. Soc. xxii. 280.

Lower Guinea. Angola: Golungo Alto, *Welwitsch*, 660!

8. **L. capensis,** *Lindl. in Ann. Nat. Hist. ser.* i. iv. 314? Pseudobulbs globose or ovoid, 5–9 lin. broad, 2–3-leaved. Leaves ovate, subobtuse or apiculate, with broad sheathing base, $\frac{3}{4}$–$1\frac{1}{4}$ in. long. Scapes 3–$4\frac{1}{2}$ in. high; racemes many-flowered. Bracts linear-lanceolate, acute, 2–6 lin. long. Capsule oblong or elliptical-oblong, pedicelled, 3–4 lin. long.—Hook. f. in Journ. Linn. Soc. vii. 218; Engl. Hochgeb. Fl. Trop. Afr. 187.

Upper Guinea. Cameroon Mountains, 6000–7000 ft., *Mann,* 2129!

The specimens, which are in fruit only, have been identified with the South African *L. capensis,* Lindl., but the determination requires confirmation when flowers are available.

9. **L. Guingangæ,** *Reichb. f. in Flora,* 1867, 103. A small plant, 3 in. high. Pseudobulbs minute, globose, 2-leaved. Leaves lanceolate, mucronate, spreading, $\frac{1}{2}$ lin. long, 2 in. broad. Scape slender, angulate; raceme few-flowered. Bracts lanceolate or ovate, acuminate, $1\frac{1}{2}$ lin. long. Flowers small, whitish or pale yellow. Dorsal sepal linear, $\frac{1}{4}$ lin. long; lateral ones ovate, slightly falcate, equalling the lip. Petals linear. Lip ovate, apiculate. Column slender, erect; apex incurved.—Ridl. in Journ. Linn. Soc. xxii. 274.

Lower Guinea. Angola: Morro de Monino, *Welwitsch,* 723!

5. **BULBOPHYLLUM,** Thou.; Benth. et Hook. f. Gen. Pl. iii. 501.

Dorsal sepal free, erect, or spreading; lateral ones oblique at the base and adnate to the foot of the column, forming a chin, erect or spreading, free or rarely connate, sometimes larger than the dorsal one. Petals mostly smaller and narrower than the sepals. Lip contracted at the base, and articulated to the foot of the column, mostly recurved, usually small and more or less fleshy, glabrous, ciliate, minutely toothed or barbate; side lobes mostly small or obsolete. Column erect, mostly very short; apex with two or rarely four variously shaped teeth; base produced into a longish foot. Anther terminal operculate, incumbent, usually somewhat depressed, 2- or rarely 1-celled; pollinia waxy, normally 4, but usually more or less connate in pairs, unappendaged or rarely cohering by a viscid exudation. Capsule ovoid or oblong.—Herbs with more or less creeping rhizomes. Pseudobulbs sessile in the axil of a sheath, ovoid-oblong, 4-angled or subcompressed, rarely absent, 1 or 2-leaved. Scapes arising from the base of the pseudobulbs, simple, their bases bearing numerous sheaths. Flowers in spikes, racemes or umbels, rarely solitary; rhachis slender or thickened, but not flattened. Bracts often small, occasionally larger and imbricate.—*Tribrachia,* Lindl. in Bot. Reg. sub t. 832. *Taurostalix,* Reichb. f. in Bot. Zeit. 1852, 933.

A genus of nearly 300 species, found almost throughout the tropics, but most numerous in India and Malaya.

*Lip entire or nearly so.

†Pseudobulbs normally 2-leaved; flowers spicate.

Bracts under 2 lin. long.

Lip glabrous.
Racemes only a few in. long.
Bracts erect or spreading, not reflexed with age.
Leaves 1–2 in. long.
Flowers distichous.
Petals subulate-linear . . . 1. *B. fuscum.*
Petals lanceolate-linear . . . 2. *B. Oreonastes.*
Flowers secund . . . . 3. *B. Braunii.*
Leaves 3–4 in. long.
Sepals 3 lin. long, acuminate . . 4. *B. denticulatum.*
Sepals 2 lin. long, subacute . . 5. *B. cæspitosum.*
Bracts spreading, reflexed with age.
Leaves elliptical . . . . . 6. *B. resupinatum.*
Leaves linear-oblong.
Petals falcate-incurved . . . 7. *B. falcipetalum.*
Petals subulate-linear . . . 8. *B. Rhizophoræ.*
Racemes very long.
Leaves linear; sepals connate to the middle 9. *B. calyptratum.*
Leaves lanceolate; sepals free . . . 10. *B. filiforme.*
Lip ciliate . . . . . 11. *B. tenuicaule.*
Bracts 3–5 lin. long.
Bracts subacuminate, lax . . . . 12. *B. bifarium.*
Bracts acute or subacute, closely imbricate.
Scapes 5–7 in. long.
Pseudobulbs oblong; racemes 1–1½ in. long 13. *B. gravidum.*
Pseudobulbs elongate; racemes 2¼–4 in. long 14. *B. cochleatum.*
Scapes 1 ft. or more long . . . . 15. *B. Mannii.*
Bracts 6–8 lin. long . . . . . 16. *B. lupulinum.*
††Pseudobulbs normally 1-leaved, occasionally 2-leaved in 17 and 36.
Flowers solitary . . . . . 17. *B. Elaidum.*
Flowers in racemes.
Pseudobulbs not flattened from the top.
Scapes filiform or nearly so.
Pseudobulbs distant . . . . . 18. *B. intertextum.*
Pseudobulbs approximate or subapproximate.
Lip glabrous . . . . . 19. *B. Quintasii.*
Lip ciliate . . . . . 20. *B. viride.*
Scapes stouter.
Lip glabrous; sepals glabrous, caudate or acuminate.
Leaves under 1 in. long . . . 21. *B. coriscense.*
Leaves 3–6 in. long.
Sepals 2½–3 lin. long, greenish-yellow . 22. *B. flavidum.*
Sepals 4–5 lin. long, orange yellow . 23. *B. aurantiacum.*
Lip ciliate.
Sepals glabrous, caudate or acuminate.
Pseudobulbs attenuate towards the apex; leaves 9–10 lin. broad . 24. *B. cocoinum.*
Pseudobulbs broad near the apex; leaves 10–15 lin. broad . . . 25. *B. andongense.*
Sepals glabrous, acute . . . . 26. *B. recurvum.*
Sepals glabrous, obtuse . . . . 27. *B. nigripetalum.*
Lip minutely serrulate or denticulate.
Sepals glabrous.

Sepals oblong, obtuse . . . 28. *B. pavimentatum.*
Sepals ovate, acute . . . . 29. *B. tetragonum.*
Sepals triangular, cuspidate . . 30. *B. Pipio.*
Sepals pubescent or villose.
Lip attenuate at the base; rhachis cylindrical . . . . 31. *B. comatum.*
Lip broad at the base; rhachis much thickened . . . . . 32. *B. inflatum.*
Lip barbate with long hairs.
Scapes 1 ft. or more long.
Bracts lanceolate-oblong, acute . . 33. *B. calamarium.*
Bracts elliptical-oblong, obtuse . . 34. *B. rupincola.*
Scapes under 6 in. long.
Pseudobulbs ovoid-oblong.
Flowers secund; lateral sepals united at the base . . . . 35. *B. porphyroglossum.*
Flowers distichous or scattered, lateral sepals free.
Bracts distichous, subdistant . 36. *B. distans.*
Bracts not distichous, approximate 37. *B. saltatorium.*
Pseudobulbs orbicular, subcompressed . 38. *B. barbigerum.*
Pseudobulbs flattened from the top (a very dwarf species) . . . . 39. *B. Nummularia.*
**Lip trilobed.
Petals spathulate . . . . . 40. *B. Gabonis.*
Petals ligulate . . . . . 41. *B. Herminiostachys.*

1. **B. fuscum,** *Lindl. in Bot. Reg.* 1839, *Misc.* 3. Pseudobulbs $\frac{3}{4}$–$1\frac{1}{2}$ in. apart, on a creeping rhizome, oblong or elliptical-oblong, tetragonous, 7–12 lin. long, diphyllous. Leaves oblong or elliptical-oblong, obtuse, $\frac{1}{2}$–$2\frac{1}{4}$ in. long, $3\frac{1}{2}$–6 lin. broad. Scapes suberect, somewhat arching above the middle, 2–$3\frac{1}{2}$ in. long; spikes $\frac{3}{4}$–$1\frac{1}{2}$ in. long. Bracts distichous, lax, triangular-ovate, acuminate, 1–2 lin. long. Sepals subequal, triangular-ovate, acuminate, 2 lin. long. Petals subulate-linear, acute, 1 lin. long. Lip very fleshy, oblong, obtuse, glabrous, $\frac{3}{4}$ lin. long, with an acute keel in front, and two similar lateral ones behind, which terminate abruptly at the base as winglike appendages. Column $\frac{1}{2}$ lin. long; teeth very short, obtuse, and winglike.—Reichb. f. in Walp. Ann. vi. 256.

Upper Guinea. Sierra Leone, *Loddiges!* Sugarloaf Mountain, *Barter*, 8! *Scott-Elliot*, 4023!

A flowerless specimen from Sierra Leone, *Afzelius*, in Swartz's Herbarium appears to be a luxuriant form of this species.

2. **B. Oreonastes,** *Reichb. f. Otia Bot. Hamb.* ii. 118. Pseudobulbs $\frac{1}{2}$–1 in. apart, on a creeping rhizome, 4-angled, ovoid-oblong, $\frac{3}{4}$ in. long, 2-leaved. Leaves oblong, obtuse, $1\frac{1}{4}$–$1\frac{3}{4}$ in. long, 3–5 lin. broad, base contracted into a short petiole. Scapes suberect, arching, $2\frac{1}{2}$–4 in. long; racemes $1\frac{1}{2}$–2 in. long. Sepals ovate-triangular, acute; lateral ones slightly falcate, $1\frac{1}{2}$–2 lin. long. Petals subulate from a triangular-lanceolate base, nearly 1 lin. long. Lip strongly recurved, fleshy, obtuse, glabrous, $\frac{3}{4}$ lin. long. Column very stout, $\frac{1}{2}$ lin. long; teeth

minute, acute from a broad base. Capsule ellipsoid-oblong, 3 lin. long. —Rolfe in Orch. Rev. iii. 70; *B. sp.*, Hook. f. in Journ. Linn. Soc. vii. 220; *B. hookerianum*, Kränzl. in Engl. Jahrb. xvii. 49; Gard. Chron. 1894, xv. 685; Rolfe in Orch. Rev. ii. 236.

Upper Guinea. Cameroons: mountains at 5000 ft., *Mann*, 2122! Buea, 5500 ft., *Preuss*, 943!

Closely allied to the preceding, but differing in the shape of the petals and other characters.

3. **B. Braunii,** *Kränzl. in Mitth. Deutsch. Schutzgeb.* ii. (1889) 154. Pseudobulbs ovoid-tetragonous, $\frac{3}{4}$ in. long, 2-leaved. Leaves lanceolate, obtuse, obliquely bilobed, about $1\frac{1}{4}$ in. long, 2–$2\frac{1}{2}$ lin. broad. Scapes about equalling the leaves, and bearing several scarious obtuse sheaths; racemes somewhat flexuose. Flowers secund, yellowish, 2 lin. diameter. Bracts oblong, obtuse, apiculate, twice as long as the ovary. Lateral sepals broadly ovate at the base, caudate above, reflexed at the apex; dorsal one oblong, long acuminate, longer than the laterals. Petals narrowly linear, obtuse, nearly as long as the lateral sepals. Lip triangular, smooth, slightly sulcate in the middle. Column very broad; teeth short, truncate.—Durand & Schinz, Conspect. Fl. Afr. v. 10.

Upper Guinea. Cameroons: Malimba, *Braun*, 81.

Only known to me from the original description.

4. **B. denticulatum,** *Rolfe in Kew Bulletin*, 1891, 197. Pseudobulbs on a stout creeping rhizome, somewhat distant, ovoid-tetragonous, $1\frac{1}{4}$ in. long, 1 in. broad, 2-leaved. Leaves linear-oblong, obtuse, 3–$3\frac{1}{2}$ in. long, 5–8 lin. broad. Scape suberect, slender, 5–6 in. long; raceme subdeflexed, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long, many-flowered. Bracts ovate, subacute, $1\frac{1}{2}$–2 lin. long. Sepals subequal, fleshy, ovate, acuminate, carinate, 3 lin. long. Petals membranous, elliptical-ovate, mucronulate, minutely denticulate, 2 lin. long; middle nerve thickened. Lip fleshy, linear-oblong, obtuse, glabrous, 2 lin. long. Column stout, $\frac{3}{4}$ lin. long; teeth oblong, subobtuse, $\frac{1}{3}$ lin. long.

Upper Guinea. Sierra Leone. Flowered in the collection of Mr. J. O'Brien, in 1892.

5. **B. cæspitosum,** *Thou. Orch. Iles Afr.*, *t.* 103. Pseudobulbs $\frac{3}{4}$–2 in. apart, on a stout creeping rhizome, oblong or ovoid-oblong, $\frac{1}{2}$–$1\frac{1}{4}$ in. long, 2-leaved. Leaves linear-oblong, obtuse, $2\frac{1}{2}$–4 in. long, 3–5 lin. broad. Scapes suberect, 3–4 in. long; raceme arching, 1–2 in. long, many-flowered. Bracts ovate, subacute, rigid, $1\frac{1}{2}$ lin. long. Sepals ovate, acute or subacute, $1\frac{3}{4}$–2 lin. long. Petals linear-lanceolate, acute. Lip recurved, fleshy, oblong. Column teeth very short.—Durand & Schinz, Conspect. Fl. Afr. v. 10.

Upper Guinea. Sierra Leone (ex *Durand & Schinz*).

I have not seen Sierra Leone specimens, and have taken the above description from Mascarene ones, referred to this species by S. Moore in Baker's *Flora of Mauritius*, 346, though they do not agree well with Thouars' original figure. It is possible that when

the neeessary materials are forthcoming some alterations will have to be made in these determinations.

6. **B. resupinatum,** *Ridl. in Bolet. Soc. Brot.* v. 198. Pseudobulbs trigonous, tricanaliculate, 1 in. long, 2-leaved. Leaves elliptical, retuse, with a minute apiculus, 1–1½ in. long, ½ in. broad. Scapes 3–4 in. long, stout, one or two from each pseudobulb, flowering almost to the base. Bracts ovate, acute, imbricate in the young scape, at length reflexed, 1½ lin. long. Flowers small, resupinate, 1 lin. long. Lateral sepals ovate, acute; dorsal one narrower. Petals linear, 1 lin. long. Lip ovate, obtuse, glabrous. Column stout; wings short, obtuse. Capsule elliptical, 2–3 lin. long.

Lower Guinea. Island of St. Thomas: near Lagoa Amelia, 4400 ft., *Moller* (ex *Ridley*); at Angolares, *Quintas*, 10!

7. **B. falcipetalum,** *Lindl. in Journ. Linn. Soc.* vi. 128. Pseudobulbs subapproximate, oblong or ovoid-oblong, 3–5 lin. long, 2-leaved. Leaves linear-oblong, obtuse, ½–1¼ in. long, 2 lin. broad. Scapes suberect, 1–2 in. long; racemes ½–1¼ in. long, 6–12-flowered. Bracts distichous, ovate, acute, ¾–1 lin. long. Flowers yellow. Dorsal sepal lanceolate, acuminate, 2 lin. long; lateral ones triangular-falcate, acuminate. Petals falcate-incurved, linear, acute, 1¼ lin. long. Lip linear-oblong from a broader base, acute, ¾ lin. long. Column stout, very short; teeth oblong, obtuse, incurved.

Upper Guinea. Niger Delta: Banks of the Nun River, *Mann*, 526!

8. **B. Rhizophoræ,** *Lindl. in Journ. Linn. Soc.* vi. 125. Pseudobulbs about ¼ in. apart on a stoutish rhizome, oblong, subcompressed, ¾–1 in. long, diphyllous. Leaves linear-oblong, obtuse, 1½–2½ in. long, 3–4 lin. broad. Scapes spreading, arcuate, 1½–3 in. long, flower-bearing nearly to the base; rhachis rusty-scaberulous. Bracts distichous, reflexed, ovate-oblong, acute or apiculate, ¾–1¼ lin. long, rusty-puberulous. Flowers rather fleshy and covered with a minute rusty pubescence, uniformly deep purple. Dorsal sepal oblong, subacute, 1–1¼ lin. long; lateral ones broadly ovate, with falcate, acute apex. Petals subulate-linear, acute, as long as the sepals. Lip oblong, obtuse, fleshy, glabrous. Column very short, with two very minute obtuse teeth.—Hook. Bot. Mag. t. 5309.

Upper Guinea. Niger Delta: Nun River, on mangroves, *Barter*, 20118!

Lindley describes the lip as villose inside, and this character is repeated in the *Botanical Magazine*, yet the plate itself shows that this is erroneous, as I also find in examining several flowers from Barter's specimens. This plate was prepared from plants sent to Kew by Mr. Gustav Mann from the same locality, but no dried specimen appears to have been preserved.

9. **B. calyptratum,** *Kränzl. in Engl. Jahrb.* xxii. 24. Pseudobulbs distant, narrowly oval, 2-leaved. Leaves linear, obtuse, bilobed. Racemes very long, slender, distantly many-flowered; base with several ochreate, retuse, apiculate sheaths. Bracts minute, reflexed. Dorsal sepal united with the lateral sepals to the middle, its free apex oblong,

obtuse, calyptrate, nearly cartilaginous; lateral ones broadly ovate, falcate, deflexed, acuminate. Petals minute, triangular. Lip much curved, triangular; disc sulcate; apex bilobed. Column short, toothed on each side behind the androclinium, but not winged.

Upper Guinea. Cameroons: Victoria, *Preuss*, 1215.

Only known to me from the original description, but remarkable for its long inflorescence.

10. **B. filiforme,** *Kränzl. in Engl. Jahrb.* xxii. 25. Pseudobulbs ovate, 2-leaved. Leaves lanceolate, obtuse. Rhachis of raceme very slender, about 2 ft. long, pendulous, lax, many-flowered; base with some ovate, acute sheaths. Bracts minute, ovate, reflexed, and as well as the rhachis and outside of the flowers sparsely covered with black hairs. Flowers minute, about $1\frac{1}{4}$ lin. in diameter. Dorsal sepal narrowly ovate, triangular, acuminate; lateral ones much broader, ovate, obtuse. Petals linear, acute, equalling the sepals. Lip curved, triangular, sulcate from the middle to the apex. Column winged from the base to near the apex.

Upper Guinea. Cameroons: between Victoria and Bimbia, *Preuss*, 1242.

Only known to me from the original description, but very remarkable in the inflorescence.

11. **B. tenuicaule,** *Lindl. in Journ. Linn. Soc.* vi. 126. Pseudobulbs $1–1\frac{1}{2}$ in. apart on a stoutish creeping rhizome, elongate-linear, attenuate above, $1\frac{1}{4}–1\frac{1}{2}$ in. long, 2-leaved. Leaves oblong-linear, obtuse, attenuate at the base, $1\frac{3}{4}$ in. long, $2\frac{1}{2}–3$ lin. broad. Scapes slender, suberect, 4 in. long; racemes $1\frac{1}{4}$ in. long, many-flowered. Bracts distichous, spreading, ovate, subacute, $1\frac{1}{2}$ lin. long. Dorsal sepal triangular-ovate, subacuminate, base concave, 2 lin. long; lateral ones triangular-lanceolate, acuminate. Petals linear, acute, $\frac{3}{4}$ lin. long. Lip recurved, oblong, obtuse, not fleshy, ciliate, $\frac{1}{2}$ lin. long. Column stout, $\frac{1}{3}$ lin. long; teeth subulate, acute, $\frac{1}{4}$ lin. long.

Upper Guinea. Fernando Po, on trees, 5000 ft., *Mann*, 648!

12. **B. bifarium,** *Lindl. in Journ. Linn. Soc.* vii. 219. Pseudobulbs $1–1\frac{1}{2}$ in. apart on a creeping rhizome, ovoid-oblong, 4-winged, $\frac{3}{4}–1\frac{1}{4}$ in. long, 2-leaved. Leaves narrowly oblong, obtuse, $2–2\frac{1}{2}$ in. long, 4–5 lin. broad. Scapes suberect, 5–6 in. high; spikes $3–3\frac{1}{2}$ in. long. Bracts distichous, ovate-lanceolate, acuminate, concave, 4–5 lin. long. Dorsal sepal elliptical-oblong, acute, concave, membranous, $2\frac{1}{2}$ lin. long; lateral ones oblong-lanceolate, nearly flat, otherwise similar. Petals quadrate-orbicular, truncate, $\frac{3}{4}$ lin. long. Lip oblong, obtuse, fleshy, recurved, glabrous, 1 lin. long; side lobes erect, rounded, and nearly auriculate. Column stout, 1 lin. long; teeth stout, acute, $\frac{1}{2}$ lin. long.—Durand & Schinz, Conspect. Fl. Afr. v. 10.

Upper Guinea. Cameroon Mountains, 5000 ft., *Mann*, 2121!
Lower Guinea. Angola (ex *Durand & Schinz*).

13. **B. gravidum,** *Lindl. in Journ. Linn. Soc.* vi. 126. Pseudo-

bulbs 1–4 in. apart on a slender creeping rhizome, narrowly ovate-oblong, 1–1¾ in. long, 2-leaved. Leaves oblong-linear, obtuse or emarginate, 3–4½ in. long, 2–3 lin. broad. Scapes erect, 4½–8 in. high; spike ½–1¼ in. long. Bracts distichous, ovate-oblong, subacute, carinate, concave, imbricate, 4 lin. long. Dorsal sepal triangular-lanceolate, subacute, glabrous, somewhat fleshy, 3 lin. long; lateral ones similar, but slightly narrower. Petals lanceolate-linear, acute, straight, glabrous, 1 lin. long. Lip reflexed from the base, spathulate-ligulate, obtuse, flat, 2½ lin. long; margin densely ciliate; base narrow and scarcely auriculate. Column ½ lin. long; teeth subulate, acute, ½ lin. long.—*B. monticolum*, Hook. f. in Journ. Linn. Soc. vii. 219; Durand & Schinz, Conspect. Fl. Afr. v. 13.

Upper Guinea. Fernando Po, 3000 ft., on trees, *Mann*, 650!
Lower Guinea. Angola (ex *Durand & Schinz*).

I cannot find a single character to separate *B. monticolum*, Hook. f.

14. **B. cochleatum,** *Lindl. in Journ. Linn. Soc.* vi. 125. Pseudobulbs ½ in. apart on a creeping rhizome, elongate-linear, terete, 2–3 in. long, 2-leaved. Leaves oblong-linear, obtuse, subsessile, 3–5 in. long, 3–9 lin. broad. Scape suberect, about 6 in. high; spike dense, 2½ in. long. Bracts distichous, broadly ovate, subacute, concave, imbricate, 3–3½ lin. long. Dorsal sepal ovate-triangular, subobtuse, glabrous, somewhat fleshy, reflexed above the middle, 2 lin. long; lateral ones similar but narrower. Petals triangular, subobtuse, fleshy, inflexed above the middle, ¾ lin. long. Lip lanceolate-oblong, subobtuse, ciliate, flat, 1½ lin. long; base rounded and somewhat auriculate; disc with a narrow central keel. Column ⅓ lin. long; teeth subulate, acute, ⅓ lin. long.

Upper Guinea. Fernando Po, 4000 ft., on trees, *Mann*, 643!

15. **B. Mannii,** *Hook. f. in Journ. Linn. Soc.* vii. 218. Pseudobulbs 1–2½ in. apart on a stout rhizome, elongate, subterete, gradually narrowed upwards, 3–3½ in. long, 2-leaved. Leaves oblong-linear, subobtuse, 4½–7 in. long, 5–10 lin. broad. Scape erect, 1¼–2¼ ft. high; spike dense, 3½–4 in. long. Bracts distichous, ovate or ovate-oblong, acute, carinate, concave, imbricate, 4–5 lin. long. Dorsal sepal triangular-lanceolate, attenuate upwards and acute, glabrous, somewhat fleshy, 2½–3 lin. long; lateral ones similar, but narrower. Petals subulate-linear, acute, erect, subfalcate, glabrous, 1 lin. long. Lip spathulate-ligulate, obtuse, strongly ciliate, flat, 2 lin. long; base not auriculate; disc with a narrow central keel. Column ⅓ lin. long; teeth subulate, acute, ⅓ lin. long.

Upper Guinea. Cameroon Mountains, 4000–5000 ft., *Mann*, 1337! 2111!

16. **B. lupulinum,** *Lindl. in Journ. Linn. Soc.* vi. 126. Pseudobulbs 3 in. or more apart on a stout rhizome, oblong, compressed-triquetrous, angles acute, 2–3 in. long, 8–14 lin. broad, 2-leaved. Leaves oblong, obtuse, 6–8 in. long, 1–1¾ in. broad. Scapes suberect, ¾–1 ft. high, with broad loose sheaths below; spikes compressed, 5–6

lin. long. Bracts distichous, ovate, subacute, carinate, conduplicate, much imbricate, 6–9 lin. long. Flowers dark purple. Dorsal sepal ovate-triangular, acute, somewhat incurved, concave, glabrous, fleshy, 2 lin. long, somewhat scaberulous; lateral ones somewhat falcate and flatter, otherwise similar. Petals falcate-linear, acute, $1\frac{1}{2}$ lin. long, glabrous. Lip orbicular with very fleshy centre, and recurved, obtuse apex; margins submembranous, suberect, and closely serrulate; disc slightly channelled. Column $\frac{3}{4}$ lin. long, very stout; teeth minute.

Upper Guinea. Sierra Leone: Ninia, on trees, *Scott-Elliot*, 4915! Cameroons: Ambas Bay, on trees, *Mann*, 783!

17. **B. Elaidum,** *Lindl. in Journ. Linn. Soc.* vi. 127. Pseudobulbs 3–5 lin. apart on a slender creeping rhizome, subglobose, 1–$1\frac{1}{2}$ lin. long, 1–2-leaved. Leaves spathulate-oblanceolate, subobtuse, 5–7 lin. long, 1–2 lin. broad. Scapes slender, $\frac{3}{4}$–1 in. long, one-flowered. Bracts two beneath each flower, the lower one cucullate-ovate, acuminate, $1\frac{1}{4}$ lin. long, the other linear and acute. Flowers greenish-white. Dorsal sepal lanceolate, acuminate, 2 lin. long; lateral ones ovate-triangular at the base, caudate-acuminate above. Petals linear-lanceolate, acuminate, $1\frac{1}{2}$ lin. long. Lip subhastate-ovate, subacute, glabrous, submembranous, $1\frac{1}{4}$ lin. long. Column stout, $\frac{1}{4}$ lin. long; teeth minute, subacute.

Upper Guinea. Niger Delta: Brass River, on oil-palms, *Barter*, 73! 1841!

18. **B. intertextum,** *Lindl. in Journ. Linn. Soc.* vi. 127. Pseudobulbs 4–6 lin. apart on a slender creeping rhizome, ovoid-globose, 2–$2\frac{1}{2}$ lin. long, 1-leaved. Leaves oblong or elliptical-oblong, obtuse, subsessile, 4–7 lin. long, 2–$2\frac{1}{2}$ lin. broad. Scapes slender, suberect or ascending, $1\frac{1}{2}$–2 in. long; racemes short, lax, few-flowered. Bracts ovate-lanceolate, acute, $\frac{3}{4}$ lin. long. Flowers green. Sepals subequal, $1\frac{1}{4}$ lin. long; base triangular-ovate; apex caudate-acuminate. Petals oblong, subacute, membranous, $\frac{1}{3}$ lin. long. Lip ovate-oblong, obtuse, fleshy, glabrous, $\frac{1}{3}$ lin. long. Column very short; teeth minute, acute.

Upper Guinea. Niger Delta: Banks of the Nun River, *Mann*, 527!

19. **B. Quintasii,** *Rolfe in Bolet. Soc. Brot.* ix. 138. Pseudobulbs approximate, ovoid-globose, $2\frac{1}{2}$–3 lin. long, 1-leaved. Leaves elliptical, obtuse, 4–9 lin. long, 2–$2\frac{1}{2}$ lin. broad. Scapes slender, suberect, $2\frac{1}{2}$–3 in. long; racemes short, lax, few-flowered. Bracts ovate-lanceolate, acute, 1 lin. long. Sepals subequal, $1\frac{1}{2}$ lin. long; base lanceolate; apex caudate-acuminate. Petals oblong, obtuse, $\frac{1}{2}$ lin. long. Lip linear, obtuse, glabrous, $\frac{1}{2}$ lin. long. Column very short; teeth minute, acute.

Lower Guinea. Island of St. Thomas, *Quintas*, 10!

20. **B. viride,** *Rolfe in Kew Bulletin*, 1893, 170. Pseudobulbs subapproximate, ovoid, 2–4 lin. long, 1-leaved. Leaves subsessile, linear-oblong, subobtuse, $\frac{1}{2}$–1 in. long, $1\frac{1}{2}$–3 lin. broad. Scapes suberect, slender, 2–$3\frac{1}{2}$ in. long; racemes short, lax, few-flowered. Bracts ovate-oblong, shortly acuminate, 1 lin. long. Sepals subequal, ovate-lanceolate,

acuminate, 2–2½ lin. long. Petals elliptical, minutely apiculate, membranous, 1 lin. long. Lip recurved, somewhat fleshy, oblong, subobtuse, ciliate, 1½ lin. long; base canaliculate. Column stout, very short; teeth subulate, incurved.

Upper Guinea, without locality. Flowered in the collection of Philip Crowley, Esq., at Croydon, in 1893.

A plant collected at Sugarloaf Mountains, Sierra Leone, by *Barter*, without flowers, is probably identical.

21. **B. coriscense,** *Reichb. f. Otia Bot. Hamb.* ii. 118. Pseudobulbs 2–3 lin. apart on a creeping rhizome, ovoid-tetragonous, 2¼–4 lin. long, 1-leaved. Leaves subsessile, elliptical, obtuse, 6–9 in. long. Scapes erect, 1½–2 in. long; racemes ½–¾ in. long, few-flowered. Bracts ovate, acute, 1–1¼ lin. long. Sepals subequal, triangular-lanceolate, 3 lin. long; apex caudate-acuminate. Petals oblong, obtuse, membranous, 1 lin. long. Lip recurved, somewhat fleshy, oblong, subacute; base somewhat broader and extended into narrow erect side lobes, 1 lin. long. Column very stout, ¼ lin. long; teeth short, acute.

Lower Guinea. Gaboon: Corisco Bay, *Mann*, 1883!

22. **B. flavidum,** *Lindl. in Bot. Reg.* 1840, *Misc.* 83. Pseudobulbs ¾–1 in. apart on a stout creeping rhizome, ovoid-oblong, ¾–1 in. long, 1-leaved. Leaves oblanceolate-oblong, subobtuse, 2½–5 in. long, ½–1 in. broad; base contracted into a short petiole. Scapes suberect, arching, 3–5 in. long, rather lax. Bracts lanceolate-oblong, acute, 1½–2 lin. long. Flowers greenish-yellow. Sepals subequal, triangular-lanceolate, acuminate, 2½–3 in. long. Petals oblong, subacute or obtuse, glabrous, membranous, ¾–1 lin. long. Lip recurved, linear-oblong, subobtuse, rather fleshy, ¾ lin. long, with a thin or narrowly-winged margin. Column stout, ½ lin. long; teeth falcate-subulate, ⅓ lin. long.—Reichb. f. in Walp. Ann. vi. 257. *Bulbophyllum Drallei*, Reichb. f. in Gartenflora, 1885, 20.

Upper Guinea. Sierra Leone. First described from specimens which flowered with Messrs. Loddiges, of Hackney, in 1840.

Var. *purpureum*, Rolfe. Sepals purple, except at the base, otherwise quite typical.

Upper Guinea. Sierra Leone, *Scott-Elliot!* Flowered at Kew in 1892.

It is rather singular that this species is only known from garden specimens, which appear to have been sent home on several different occasions. *B. Drallei*, Reichb. f., is identical.

23. **B. aurantiacum,** *Hook. f. in Journ. Linn. Soc.* vii. 219. Pseudobulbs ½–1 in. apart on a stout creeping rhizome, ovoid or ovoid-oblong, ½–¾ in. long, 1-leaved. Leaves oblong-linear, obtuse or subobtuse, 6–7 in. long, 5–8 lin. broad, narrowed below into a rather long petiole. Scapes suberect, arching, 7–9 in. long; racemes 4–5 in. long, many-flowered. Bracts oblong-lanceolate, acute, 2–2½ in. long. Sepals subequal, triangular-lanceolate, acuminate, glabrous, 4–5 lin. long. Petals oblong, subacute, glabrous, 1½ lin. long. Lip recurved, linear-oblong, subobtuse, glabrous, 1½ lin. long; disc bicarinate, canaliculate. Column stout, ¾ lin. long; teeth subulate, acute, ¼ lin. long.—Kränzl. in

Mitth. Deutsch. Schutzgeb. Afr. ii. (1889) 154; Durand & Schinz, Conspect. Fl. Afr. 10.

Upper Guinea. Cameroons: mountains at 5000–6000 ft., *Mann*, 2124! Malimba, *Braun*, 62 (ex *Kränzlin*).

24. **B. cocoinum,** *Batem. ex Lindl. in Bot. Reg. t.* 1964. Pseudobulbs approximate on a stout rhizome, ovoid-tetragonous, 1–1¼ in. long, 1-leaved. Leaves lanceolate, acute, 5–6 in. long, 9–10 lin. broad. Scapes suberect, arching, 9–10 in. long; racemes 6–7 in. long, many-flowered. Bracts oblong-lanceolate, acute, 1½–2 lin. long. Sepals subequal, caudate-acuminate from a somewhat broader base, 5 lin. long. Petals lanceolate, subacute, glabrous, 1–1¼ lin. long. Lip recurved, oblong-lanceolate, subobtuse, ciliate, 1¼ lin. long. Column stout, ½ lin. long, teeth subulate, acute, ¼ lin. long.—Reichb. f. in Walp. Ann. vi. 255; Durand & Schinz, Conspect. Fl. Afr. v. 11.

Upper Guinea. Sierra Leone, cultivated specimens! Cameroons (ex *Durand & Schinz*). Originally flowered with Messrs. Loddiges, of Hackney, in 1835.

25. **B. andongense,** *Reichb. f. in Flora*, 1865, 184. Pseudobulbs approximate on a stout rhizome, oblong, 4-angled, 1¼–1½ in. long, 1-leaved. Leaves lanceolate-oblong, acute, 3–5 in. long, 10–15 lin. broad. Scapes suberect, 10–11 in. long, racemes 7–8 in. long, many-flowered. Bracts lanceolate-oblong, acute, 2 lin. long. Flowers pink. Sepals subequal, caudate-acuminate from a broader base, 3½ lin. long. Petals linear-oblong, subacute, glabrous, 1 lin. long. Lip recurved, oblong-lanceolate, subobtuse, ciliate, 1 lin. long. Column stout, ⅓ lin. long; teeth falcate-linear, acute, ⅓ lin. long.

Lower Guinea. Angola: near Pungo Adongo, on perpendicular rocks, *Welwitsch*, 689!

26. **B. recurvum,** *Lindl. Gen. & Sp. Orch.* 53. Pseudobulbs ¼–⅓ in. apart on a creeping rhizome, ovoid-oblong, subcompressed, 6–9 lin. long, 1-leaved. Leaves oblong, obtuse, somewhat attenuate at the base, 2½–5 in. long, 6–10 lin. broad. Scapes slender, usually deflexed or horizontal, arcuate, 3–7 in. long; racemes 1½–4 in. long, many-flowered. Bracts lanceolate or oblong-lanceolate, acute, 1½ lin. long. Sepals subequal, somewhat fleshy, triangular-lanceolate, acuminate, 2 lin. long. Petals oblong, obtuse, membranous, ¾ lin. long. Lip recurved, oblong, glabrous, very fleshy along the middle, ¾ lin. long; teeth falcate-subulate, ⅓ lin. long.—Rolfe in Bolet. Soc. Brot. ix. 53. *Tribrachia pendula*, Lindl. Coll. Bot. sub t. 41; Bot. Reg. t. 963.

Upper Guinea. Sierra Leone, *Don! Barter!* Summit of Sugarloaf Mountain, on old trunks and boulders, *Scott-Elliot*, 5778! Lagos, *Moloney!*

Lower Guinea. Island of St. Thomas, *Henriques*, 29!

27. **B. nigripetalum,** *Rolfe in Kew Bulletin*, 1891, 197. Pseudobulbs approximate, broadly depressed ovoid, 6 lin. long, 8 lin. broad, 1-leaved. Leaves lanceolate-linear, obtuse, 3 in. long, 5 lin. broad. Scape suberect, slender, 6–10 in. long; racemes 3–5 in. long. Flowers mostly secund. Bracts lanceolate, acute, carinate, ¾ lin. long. Dorsal

sepal oblong, obtuse, slightly ciliate, $2\frac{1}{4}$ lin. long: lateral ones a little broader, mucronulate. Petals obovate-oblong, obtuse, strongly ciliate, 1 lin. long. Lip very fleshy, narrowly oblong, obtuse, ciliate and shortly pubescent, 2 lin. long, channelled at the base. Column $\frac{1}{3}$ lin. long; teeth broad, subacute, very short.

Upper Guinea, without locality. Imported by Messrs. F. Sander & Co.

28. **B. pavimentatum,** *Lindl. in Journ. Linn. Soc.* vi. 128. Pseudobulbs approximate, ovoid, subcompressed, 5–7 lin. long, 1-leaved. Leaves oblong or elliptical-oblong, obtuse, subsessile, $2\frac{1}{2}$–4 in. long, $\frac{3}{4}$–1 in. broad. Scapes slender, mostly deflexed or horizontal, 4–6 in. long; racemes $1\frac{1}{4}$–2 in. long, dense. Bracts elliptical-oblong, obtuse, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. long. Flowers red-purple. Sepals fleshy, subequal, oblong, obtuse, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. long. Petals oblong, obtuse, $\frac{1}{2}$ lin. long. Lip recurved, fleshy, oblong, obtuse, scaberulous, $\frac{1}{2}$ lin. long; margin minutely serrulate-denticulate. Column stout, $\frac{1}{4}$ lin. long; teeth falcate-subulate, $\frac{1}{4}$ lin. long. — Bot. Mag. t. 5329; Kränzl. in Mitth. Deutsch. Schutzgeb. ii. (1889) 155; Durand & Schinz, Conspect. Fl. Afr. v. 13.

Upper Guinea. Niger Delta: Banks of the Nun River, *Mann,* 519! Cameroons, *Braun,* 66 (ex *Kränzlin*).

A plant from Lagos which flowered at Kew in 1891 may be a form of this species.

29. **B. tetragonum,** *Lindl. Gen. & Sp. Orch.* 53. Pseudobulbs ovate, acutely 4-angled, 1-leaved. Rhachis 4-angled, flexuous, pubescent with black hairs. Bracts oblong, acute, cymbiform, somewhat pubescent on the back, as long as the capsule. Flowers small, straight. Sepals equal, ovate, acute, connivent. Petals subulate, erect, a little longer than the column. Lip ovate or ovate-oblong, fleshy; margin membranous and serrate. Column very short and roundish; teeth very minute.

Upper Guinea. Sierra Leone. Flowered in the collection of the Horticultural Society before 1830.

Only known to me from the description and a sketch in Lindley's Herbarium. The author speaks of it as a curious little plant formerly cultivated in the collection of the Horticultural Society, but now lost, adding: "It is frequently sent from Sierra Leone mixed with other epiphytes, and is, I should think, very common in that colony."

30. **B. Pipio,** *Reichb. f. in Linnæa,* xli. 92. Plant an inch high. Pseudobulbs conical, short, 1-leaved. Leaves lanceolate. Peduncle with many sheaths at the base, racemose above. Bracts spathaceous, aristate, 1-nerved, slightly longer than the sulphur-white flowers. Sepals triangular, cuspidate. Petals lanceolate, not half as long as the sepals. Lip unguiculate, ligulate, slightly crenulate at the sides, with an obtuse auricle at either side of the base; disc at this point thickened and sulcate. Column with two setose teeth.—Kränzl. in Mitth. Deutsch. Schutzgeb. ii. (1889) 155.

Upper Guinea. Cameroons, *Braun.*

Only known to me from the description, but evidently allied to the preceding. It flowered in the Hamburg Botanic Garden about 1877.

31. **B. comatum,** *Lindl. in Journ. Linn. Soc.* vi. 128. Pseudo-

bulbs 1–1¼ in. apart on a creeping rhizome, ovoid-tetragonous, ¾–1¼ in. long, 1-leaved. Leaves lanceolate or linear-lanceolate, acute, 5–10 in. long. Scapes suberect or horizontal, 3–5 in. long. Bracts lanceolate, acuminate, glabrous, 4–6 lin. long. Sepals subequal, triangular-lanceolate, caudate-acuminate, strongly carinate, 4–4½ lin. long; keels of lateral sepals pilose-ciliate. Petals spathulate-oblanceolate, subacute, 1½ lin. long; margins minutely ciliate. Lip recurved, oblong, obtuse, minutely scaberulous-papillose, 1–1¼ lin. long. Column stout, ½ lin. long; teeth 4, oblong subobtuse, very short.

Upper Guinea. Fernando Po, 2000 ft., on trees, *Mann*, 642!

Very remarkable in the villose sepals.

32. **B. inflatum,** *Rolfe in Gard. Chron.* 1891, ix. 234. Pseudobulbs approximate on a creeping rhizome, strongly 4-angled, 1 in. long by nearly as broad, 1-leaved. Leaves sessile, lanceolate-oblong, acuminate, suddenly contracted at the base, 3–4 in. long, 1–1½ in. broad. Scapes pendulous, 2 in. long; racemes 1–1¼ in. long; rhachis swollen into an ellipsoidal fleshy body, about ½ in. broad, many-flowered. Bracts lanceolate, acuminate, glabrous, 5–6 lin. long. Sepals triangular-lanceolate, acuminate, strongly carinate, 4–4½ lin. long; keels ciliate, the lateral ones very strongly so. Petals spathulate, obtuse, glabrous, 1¾ lin. long. Lip recurved, linear-oblong, obtuse, scaberulous-papillose, 1½ lin. long. Column stout, ¾ lin. long; teeth falcate-oblong, acute, ¼ lin. long.

Upper Guinea. Sierra Leone. Flowered at Kew in 1887!

Allied to the preceding, and remarkable for the much thickened rhachis.

33. **B. calamarium,** *Lindl. in Bot. Reg.* 1843, *Misc.* 70. Pseudobulbs about ¾–1 in. apart on a stout creeping rhizome, 4-angled, broadly oblong, 1½ in. long, 1-leaved. Leaves oblong, obtuse, 6–7½ in. long, coriaceous. Scapes erect, stout, 1¼–1¾ ft. long; racemes 4–6 in. long, many-flowered. Bracts not distichous, numerous and imbricate, oblong-lanceolate, acute, 6–10 lin. long. Sepals somewhat fleshy, narrowly triangular-lanceolate, subacute, 5–5½ lin. long, yellow. Petals falcate-linear, acute, glabrous, 1¾ lin. long. Lip ligulate, obtuse, 4–4½ lin. long; margins pilose with long purple hairs; side-lobes obtusely rounded, somewhat ciliate. Column stout, 1 lin. long; teeth falcate-linear, acute, ½ lin. long.—Bot. Mag. 4088 (*Calamaria* by error); Hook. Cent. Orch. 17, t. 4; Lindl. in Journ. Linn. Soc. vi. 125; Reichb. f. in Walp. Ann. vi. 252.

Upper Guinea. Sierra Leone, *Fielding!* Niger Territory: Ibo; Nsube, *Barter*, 1482! Cameroons: Bipinde, *Zenker*, 832!

34. **B. rupincola,** *Reichb. f. in Flora*, 1865, 184. Pseudobulbs 1¼–1½ in. apart on a stout creeping rhizome, ovoid-tetragonous, 1¼–1½ in. long, 1-leaved. Leaf elliptical-oblong, obtuse, 4–5 in. long, 1½ in. broad, attenuate at the base into a short broad petiole. Scape suberect, rather stout, 1¼ ft. long; raceme 3½ in. long, many-flowered. Bracts not distichous, numerous and imbricate, oblong, subacute, 5 lin. long. Sepals fleshy, subequal, base ovate-oblong, triangular lanceolate above

the middle, subacute, 5 lin. long. Petals falcate-linear, acute, glabrous, 1½ lin. long. Lip ligulate, subobtuse, densely pilose with purple hairs 4 lin. long; side lobes obtusely rounded, slightly ciliate. Column stout, 1 lin. long; teeth falcate-linear, obtuse, ½ lin. long.

Lower Guinea. Angola: Pungo Adongo, on rocks, *Welwitsch*, 697!

Closely allied to the preceding.

35. **B. porphyroglossum,** *Kränzl. in Engl. Jahrb.* xxii. 24. Plant about 4¾ in. high. Rhizome creeping, ascending. Pseudobulbs aggregated, ovoid-tetragonal, 1-leaved. Leaves linear-lanceolate, acute, twice as long as the racemes. Scape with two or three long sheaths; raceme secund. Bracts ovate, acute, equalling the ovary. Flowers about 2½ lin. in diameter, yellow with a purple lip. Sepals narrowly ovate, acuminate: lateral ones united only at the base. Petals cuneate-obovate, obtuse. Lip curved, ligulate from a caudate base, obtuse, densely pilose; disc with a polished channel in the middle. Column with subulate elongate teeth.

Upper Guinea. Cameroons: Victoria, *Preuss*, 1279.

Only known to me from the original description. It is compared with the Indian *B. reptans*, Lindl.

36. **B. distans,** *Lindl. in Journ. Linn. Soc.* vi. 125. Pseudobulbs 5–6 lin. apart on a creeping rhizome, ovoid, 4-angled, 5–6 lin. long, 2-leaved. Leaves linear-oblong, obtuse, 5–6 lin. long, 8–9 lin. broad. Scape suberect, 4 in. high; spike 1¼ in. long, few-flowered. Bracts distichous, ovate-oblong, acute, not imbricate, 3–4 lin. long. Sepals long acuminate from an ovate base, 6 lin. long. Petals setaceous, falcate with recurved apex, 2 lin. long. Lip linear from a broader base, 6 lin. long, covered with long setaceous purple hairs. Column very stout, ¾ lin. long; teeth falcate-subulate, ½ lin. long.

Upper Guinea. Niger Delta: Banks of the Nun River, *Mann*, 525!

37. **B. saltatorium,** *Lindl. in Bot. Reg. t.* 1970. Pseudobulbs 1–1¼ in. apart on a stoutish creeping rhizome, ovoid, subtetragonous, 1–1¼ in. long, 1-leaved. Scapes suberect or horizontal, 2½–3½ in. long; raceme 1½ in. long, many-flowered. Bracts not distichous, lanceolate-oblong, subacute, 2½–3 lin. long. Sepals subequal, triangular-lanceolate, subacute, 3–3½ lin. long. Petals subulate-acicular, 1½ lin. long. Lip linear, base broader and nearly glabrous, densely pilose above the middle with long purple hairs, the whole 4½–5 lin. long. Column stout, ½ lin. long; teeth incurved, scarcely equalling the column.—Rolfe in Gard. Chron. 1889, vi. 324.

Upper Guinea. Sierra Leone. Flowered in Messrs. Loddiges' Nursery in 1837.

A barren specimen from the Gold Coast, *Burton and Cameron*, apparently belongs here.

38. **B. barbigerum,** *Lindl. in Bot. Reg. t.* 1942. Pseudobulbs ¾–1 in. apart on a stout creeping rhizome, suborbicular or elliptical-

oblong, subcompressed, ¾–1 in. long, 1-leaved. Leaves oblong, obtuse, 2–3 in. long, ¾–1 in. broad. Scapes suberect or deflexed, arcuate, 4–8 in. long; raceme 3–4 in. long, many-flowered. Bracts distichous, spreading, lanceolate-ovate, acuminate, 3–4½ lin. long. Sepals spreading, narrowly triangular-lanceolate, acute, 5–6 lin. long. Petals minute, subulate, ⅓ lin. long. Lip linear, base villose, upper half pilose with purple hairs 9–10 lin. long, some of which are clavate. Column stout, ½ lin. long; teeth incurved, falcate-linear, ¾ lin. long.—Bot. Mag. t. 5288; Reichb. f. in Walp. Ann. vi. 252.

Upper Guinea. Sierra Leone, cultivated specimen, *Loddiges!* Lagos, *Moloney!* Delta of the Niger, *Dalton!*

39. **B. Nummularia,** *Rolfe.* Rhizome creeping, pseudobulbs remote, orbicular, flattened from the top, ¾ in. thick, 1-leaved. Leaves oblong, acute at each end, 1 in. long, ½ in. broad. Scape about ½ in. long, with some basal sheaths; racemes 6–8-flowered; rhachis not or scarcely thickened, zigzag. Flowers one-sided, dark purple, with green lip. Bracts very broad, somewhat sheathing the flowers. Dorsal sepal oblong, subacute; margin pilose; lateral ones smaller, with fimbriate margin. Petals very minute, nearly orbicular; margin deeply fimbriate. Lip ligulate from a broader, pilose-margined base, obtuse. Column very short, with two minute teeth.—*Megaclinium Nummularia,* Wendl. & Kränzl. in Gard. Chron. 1894, xv. 685.

Upper Guinea. South Cameroons, *Braun.*

Only known to me from the original description, which, however, shows that the essential character of *Megaclinium* is wanting. Its exact affinity is a little doubtful.

40. **B. Gabonis,** *Lind. & Reichb. f. in Flora,* 1865, 185. Pseudobulbs oval, attenuate above. Leaves ligulate, acute, not contracted into a petiole. Scape medium-sized, distantly sheathed, racemose above. Bracts ligulate, acute, exceeding the ovary. Sepals triangular-aristate. Petals spathulate, apiculate, crenulate, not half as long as the sepals. Lip 3-lobed; side lobes semiovate, serrulate; front one oblong-ligulate, obtuse, serrulate, with four elevated lines along the disc, and some papillæ on the front lobe. Column-teeth ligulate, obtuse.

Lower Guinea. Gaboon (presumably).

Only known to me from the original description, which neither mentions the affinity, native country, nor collector. The habitat is assumed from the specific name. This and the following species are remarkable for the three-lobed lip.

41. **B. Herminiostachys,** *Reichb. f. in Walp. Ann.* vi. 254. Leaf oblong, acute. Sepals somewhat fleshy, lanceolate, acuminate, the lateral ones curved and united at the extreme base. Petals much shorter, ligulate; apex triangular; base with obtuse angles. Lip unguiculate, 3-lobed; side lobes triangular, erect, rounded behind, gradually passing in front into the ligulate, microscopically denticulate front lobe, which has a revolute margin; disc with a pair of fleshy keels, and three to five calli at the extreme base. Column very short, teeth elongate, terete-

subulate, longer than the column, slightly denticulate in front, and decurrent.—*Taurostalix Herminiostachys*, Reichb. f. in Bot. Zeit. 1852, 933.

Upper Guinea. Sierra Leone (ex *Reichenbach !*).

Only known to me from the original description. Flowers as large as those of *Herminium Monorchis*, R. Br.

There are barren specimens of two species of *Bulbophyllum* from Nyasaland, *Whyte !* which are the only ones known from the eastern side of the continent.

6. **MEGACLINIUM**, Lindl.; Benth. et Hook. f. Gen. Pl. iii. 505.

Dorsal sepal free, erect or spreading, longer than the triangular-ovate acuminate lateral ones, which are either falcate or reflexed about the middle, base of laterals adnate to the foot of the column. Petals smaller and narrower than the sepals. Lip articulated to the foot of the column, mobile, inflexed at the base, recurved above, entire or denticulate at the base, rarely somewhat 3-lobed. Column short, broadly dilated and winged on both sides, terminating above in square or rounded teeth; base produced into a short foot. Anther as in *Bulbophyllum*.—Epiphytic herbs, with stout creeping rhizomes; pseudobulbs sessile in the axil of a sheath, mostly 3–5-angled, 2- or 1-leaved. Scapes arising from the base of the pseudobulbs, simple; apex dilated into a flattened, often ensiform and almost foliaceous rhachis, along either side of which the flowers and bracts are distichously arranged. Bracts usually ovate or triangular, ultimately much deflexed. Flowers small, pedicelled, curved.

A genus of about 23 species, mostly Tropical African, but with two in Extra-tropical South Africa and one reported from Madagascar, of which the habitat requires confirmation.

Rhachis thick and fleshy, with rounded or obtuse margins.
- Bracts broadly ovate, obtuse.
  - Petals falcate-linear.
    - Flowers yellow; dorsal sepal but a very little longer than the linear petals . . . . . 1. *M. leucorhachis.*
    - Flowers purple; dorsal sepal quite a third longer than the filiform petals . . . . . 2. *M. imbricatum.*
  - Petals falcate-lanceolate . . . . . 3. *M. triste.*
- Bracts broadly ligulate, acute . . . . . 4. *M. strobiliferum.*

Rhachis with thin, more or less wing-like margins.
- Lip fimbriate or denticulate at the base.
  - Petals falcate-linear.
    - Sepals recurved or reflexed above the middle . 5. *M. maximum.*
    - Sepals not recurved above the middle . . . 6. *M. oxypterum.*
  - Petals falcate-lanceolate . . . . . 7. *M. imschootianum.*
- Lip entire at the base.
  - Rhachis 1–5 in. long; flowers $1\frac{1}{2}$–4 lin. apart.
    - Pseudobulbs obscurely or distinctly 3-angled.
      - Scape 4 in. or more high.
        - Sepals velvety . . . . . 8. *M. velutinum.*
        - Sepals smooth . . . . . 9. *M. colubrinum.*
      - Scape about 2 in. high . . . . . 10. *M. minutum.*
    - Pseudobulbs obscurely or distinctly 4-angled.

Flowers arranged along the centre of the rhachis or nearly so.	
Rhachis 1½–2 in. long, 2½–3 lin. broad	11. *M. Millenii.*
Rhachis 2–4 in. long, 3–5 lin. broad.	
Pseudobulbs obscurely 4-angled; dorsal sepal subspathulate-oblong	12. *M. falcatum.*
Pseudobulbs strongly 4-angled; dorsal sepal subulate-linear	13. *M. Clarkei.*
Flowers much nearer one margin of the rhachis than the other.	
Petals linear or filiform acute.	
Petals falcate-linear; scape about 2 in. high	14. *M. melanorrhachis.*
Petals filiform; scape about 4 in. high	15. *M. pusillum.*
Petals with spathulate apex	16. *M. tentaculigerum.*
Pseudobulbs strongly 5-angled	17. *M. Melleri.*
Rhachis 8–10 in. long; flowers 6 lin. or more apart.	
Dorsal sepal lanceolate	18. *M. Bufo.*
Dorsal sepal spathulate	19. *M. Lindleyi.*

DOUBTFUL SPECIES.

Rhachis 6 in. long, 1 in. broad, margin crenulate; flowers 2 lin. apart	20. *M. platyrachis.*

1. **M. leucorhachis,** *Rolfe in Kew Bulletin*, 1891, 198. Rhizome stout, creeping. Pseudobulbs ovoid-oblong, acutely 4-angled, 2½ in. long, 1¼ in. broad, 1-leaved. Leaves linear-oblong, obtuse, 6–7 in. long, 1 in. broad. Scape erect, 6–7 in. long; rhachis falcate-ensiform, rather thick, obscurely crenulate, 3 in. long, 4 lin. broad, white. Bracts reflexed, ovate, obtuse, 2½ lin. long. Flowers 1½–2 lin. apart, yellow, velvety. Dorsal sepal subulate-linear, acute, 3½ lin. long; lateral ones falcate-ovate, subacute, 2 lin. long. Petals falcate-linear, acute, 2½ lin. long. Lip recurved; base broad, fimbriate; apex linear-oblong, obtuse, 1 lin. long. Column 1 lin. long, winged; teeth short, acute. Capsule oblong, 4 lin. long.

Upper Guinea. Lagos, *Moloney! Millen*, 189!

Originally described from a cultivated specimen received from Sir Trevor Lawrence.

2. **M. imbricatum,** *Rolfe*. Scapes nearly a foot long, with several tubular, nearly truncate sheaths; rhachis linear, flattened, rather fleshy, 2½–3 in. long, with obtuse margins. Bracts ovate or triangular-ovate, obtuse, ultimately reflexed, imbricate, 2½–3 lin. long. Flowers approximate, deep purple, somewhat pubescent outside. Dorsal sepal lanceolate-linear, subobtuse; lateral ones ovate-oblong, much shorter than the dorsal one; apex shortly acuminate and falcate. Petals filiform, incurved, hirsute, a little exceeding the lateral sepals. Lip recurved, ovate, acute, pectinate at the base. Column stout, teeth apparently obtuse.—*Bulbophyllum imbricatum*, Lindl. Bot. Reg. 1841, Misc. 37; Reichb. f. in Walp. Ann. vi. 249.

Upper Guinea. Sierra Leone, *Loddiges*, cultivated specimen!

A scape and sketch of the flower are preserved in Lindley's Herbarium, which

show the species to be very distinct. No flowers are preserved, and the plant does not appear to have been again met with. It flowered in Messrs. Loddiges' Nursery in 1841.

3. **M. triste,** *Rolfe in Kew Bulletin*, 1894, 362. Pseudobulbs trigonous, obtusely angled, 1½–2 in. long, 2-leaved. Leaves linear-oblong, obtuse, 3–5 in. long, ¾–1 in. broad. Scape elongate, with about eleven sheaths near the base, 1¼ ft. long; rhachis somewhat compressed, thick and fleshy, obtusely angled, obscurely crenulate, scaberulous, 3–4 in. long, 5 lin. broad, 3 lin. thick. Bracts about 1½ lin. apart, spreading, broadly ovate, obtuse, concave, 4 lin. long by about as broad at the base. Flowers velvety, green speckled with black. Dorsal sepal linear-subulate, acute, recurved, 5 lin. long; lateral ones falcate-ovate, subobtuse, 3 lin. broad. Petals subulate, falcately recurved, 4 lin. long. Lip with broad pectinate base, and narrow, obtuse, entire and recurved apex, 1 lin. long. Column short, margined, with short teeth.

Habitat not precisely known, but believed to be some part of West Tropical Africa. It flowered at Kew in 1894.

4. **M. strobiliferum,** *Rolfe.* Pseudobulbs triangular, compressed, 1½ in. long, 1 in. broad, two sides flat, the third narrower and channelled, 2-leaved. Leaves oblong-lanceolate, obtuse, 6 in. long, 14 lin. broad. Peduncle stout, a foot or more long, with seven or eight appressed obtuse sheaths, thickened and fusiform above. Bracts densely imbricate, broadly ligulate, acute, spreading at right angles. Flowers distichous, cartilaginous, 4½ lin. long. Dorsal sepal straight, narrowly triangular, long acuminate, smooth outside, sparsely puberulous inside; lateral ones broadly ovate, suddenly ovate from the rounded base, acuminate and deflexed, puberulous below. Petals linear, puberulous, nearly equalling the sepals. Lip curved, narrowly triangular, acute, fimbriate at the base. Column very broadly winged, cucullate.—*Bulbophyllum strobiliferum*, Kränzl. in Mitth. Deutsch. Schutzgeb. ii. (1889) 155; Durand & Schinz, Conspect. Fl. Afr. v. 14.

Upper Guinea. Cameroons, *Braun*.

Only known to me from the original description, but said to be an ally of *Bulbophyllum imbricatum*, Lindl., i.e., *Megaclinium imbricatum*, Rolfe.

5. **M. maximum,** *Lindl. Gen. & Sp. Orch.* 47 (*not elsewhere*). Rhizome very stout and woody. Pseudobulbs distant, tetragonous-oblong, 2–2½ in. long, 2-leaved. Leaves oblong, obtuse, coriaceous, 4–5 in. long, 1–1¼ in. broad. Scapes 1–1¼ in. long, with several tubular sheaths; rhachis ensiform, flattened, coriaceous, crenulate-undulate, 4–5 in. long, 6–7 lin. broad, purple. Bracts ultimately deflexed, 1½–2 lin. long; margins recurved. Flowers 1½–2 lin. apart. Pedicels very short. Flowers purple. Dorsal sepal ovate-lanceolate, acuminate, concave, 2½ lin. long; lateral ones triangular-ovate, 2 lin. long, falcate at the apex, acuminate; all the sepals recurved or reflexed above the middle. Petals falcate-linear, acuminate, 1¼ lin. long. Lip oblong, obtuse, from a broader denticulate base, 1¼ lin. long. Column ½ lin.

long, broadly winged; apex with two minute teeth.—Ridl. in Journ. Bot. 1886, 292. *M. purpuratum*, Lindl. in Journ. Linn. Soc. vi. 128; Bot. Mag. t. 5936.

Upper Guinea. Sierra Leone, *Smeathman! Afzelius!* Niger Delta: Brass River, *Barter*, 1854!

Lower Guinea. Island of St. Thomas, at Angolares, *Quintas*, 9!

Lindley unfortunately transferred the name *M. maximum* to another species (see note under *M. Lindleyi*, Rolfe) and afterwards redescribed the present one as *M. purpuratum*. Barter records the flowers and whole spikes as purple, but in the Botanical Magazine figure both are light green with purple markings.

6. **M. oxypterum,** *Lindl. in Bot. Reg.* 1839, *Misc.* 14. Rhizome stout. Pseudobulbs distant, oblong, acutely 4–5-angled, 1½–2 in. long, 2-leaved. Leaves oblong, obtuse, coriaceous, 3–4 in. long, 8–16 lin. broad. Scapes ¾–1 ft. long, with several tubular-spathaceous sheaths; rhachis ensiform or linear-oblong, narrowed above, somewhat thickened and coriaceous, 3½–4½ in. long, 5–7 lin. broad. Bracts triangular-ovate, acute, ultimately reflexed and the margins recurved, 2 lin. long. Flowers 2–3 lin. apart, yellow. Pedicels short. Dorsal sepal ovate-lanceolate, acuminate, concave, 2½ lin. long; lateral ones broadly ovate, acuminate, concave, 2 lin. long; all nearly straight. Petals falcate-linear, acute, 1¼–1½ lin. long. Lip linear oblong, subobtuse, from a broader denticulate base, 1 lin. long. Column ½ lin. long, broadly winged; teeth short, obtuse.—Lindl. in Journ. Linn. Soc. vi. 128. *Bulbophyllum oxypterum*, Reichb. f. in Walp. Ann. vi. 258.

Upper Guinea. Sierra Leone, *Loddiges*, cultivated specimen!
Lower Guinea. Princes Island, *Barter*, 2026!

Closely allied to the preceding, which it much resembles.

7. **M. imschootianum,** *Rolfe in Kew Bulletin*, 1895, 8. Pseudobulbs acutely triangular, oblong, 1¾ in. long, 8 lin. broad, 1-leaved. Leaves linear-oblong, obtuse, 6 in. long, 1¼ in. broad. Scape 10 in. long, with several sheaths towards the base; rhachis linear-oblong, acute, thin, 5–6 in. long, 7–8 lin. broad; margin obscurely crenulate. Bracts ovate-oblong, acute, 2½–3 lin. long, at length reflexed, their margins very soon recurved. Flowers 3–4 lin. apart. Pedicels 1½–2 lin. long. Dorsal sepal lanceolate-oblong, very acuminate, 5 lin. long; lateral ones ovate, very acuminate, 4 lin. long, 2½ lin. broad; apex reflexed. Petals falcate-lanceolate, shortly acuminate, 1¾ lin. long. Lip recurved, fleshy, linear-oblong, obtuse, minutely serrulate below the middle, 2 lin. long. Column short, very broadly winged, with two minute teeth near the apex.

Habitat unknown, but probably some part of West Tropical Africa. It flowered in the collection of M. A. Van Imschoot in 1895.

8. **M. velutinum,** *Lindl. in Bot. Reg.* 1847, *sub t.* 32. Pseudobulbs ovate, triangular. Leaves oblong-lanceolate, emarginate. Scape 3 in. long, with several tubular basal sheaths; rhachis linear-oblong, subacute, obscurely crenulate, thin, minutely scaberulous, 3½ in. long,

6–7 lin. broad, dark purple. Bracts reflexed, ovate, subacute, 1 lin. long, velvety. Flowers minutely velvety outside. Dorsal sepal lanceolate-oblong, subobtuse, recurved, $2\frac{1}{2}$ lin. long, yellow; lateral ones ovate-triangular, acute, apex reflexed, $1\frac{3}{4}$ lin. long, dark purple. Petals falcate-lanceolate, acute, $1\frac{1}{4}$ lin. long, yellow. Lip ovate, obtuse, transversely corrugated, $1\frac{1}{4}$ lin. long, purple. Column $\frac{1}{3}$ lin. long; base broadly winged; wings terminating in broad, obtuse teeth.—*Bulbophyllum velutinum*, Reichb. f. in Walp. Ann. vi. 258.

Upper Guinea. Gold Coast: Cape Coast Castle, *Loddiges*, cultivated specimen!

9. **M. colubrinum,** *Reichb. f. in Bonplandia*, iii. 223. Rhizome stout and woody, clothed with withered sheaths. Pseudobulbs triangular, the faces oval. Leaf cuneate-oblong, fleshy, apex subemarginate, 4 in. long, 1 in. broad. Scape a span high, blackish-violet, with many white spots, terete to the middle, with seven sheaths, 2-edged above; margin flexuous. Bracts ligulate, deflexed. Flowers dark violet, shining, larger than those of *M. falcatum*. Sepals very smooth and glabrous, cuspidate, yellowish-green inside. Petals falcate, acute, a third shorter than the sepals. Lip ligulate, subtrilobed, very fleshy, yellow, spotted with dark violet. Column channelled, winged, obtusely angled at each side behind the apex, yellow, spotted with dark violet; clinandrium or anther-bed obtusely tridentate.—*Bulbophyllum colubrinum*, Reichb. f. in Walp. Ann. vi. 257.

Locality unknown, but probably Tropical Africa.

Originally described from a plant cultivated by Booth & Son, Flottbeck, near Hamburg, in 1855, and only known to me from the description, but apparently allied to the preceding in its triangular pseudobulbs and other characters.

10. **M. minutum,** *Rolfe in Kew Bulletin*, 1893, 5. Pseudobulbs approximate, ovoid-oblong, obscurely triangular, $\frac{1}{2}$–$1\frac{1}{4}$ in. long, 2-leaved. Leaves linear-oblong, obtuse or minutely bidentate, $\frac{1}{4}$–1 in. long, $1\frac{1}{2}$–$2\frac{1}{2}$ lin. broad. Scapes short, suberect, $1\frac{1}{2}$ in. long; rhachis oblong, crenulate, minutely lepidote, purple-brown, 1 in. long, $2\frac{1}{2}$ lin. broad, about 12-flowered. Bracts reflexed, triangular, acute, 1 lin. long. Flowers fleshy, dull maroon, greenish-yellow towards the base of the segments. Pedicels and back of sepals ferrugineous-pubescent. Dorsal sepal oblong, obtuse, $1\frac{1}{4}$ lin. long; lateral ones ovate-triangular, shortly acuminate, 1 lin. long; apex reflexed. Petals linear-subulate, acuminate, $\frac{3}{4}$ lin. long. Lip cordate-ovate, obtuse, $\frac{1}{2}$ lin. long; its apex reflexed. Column very short, with small oblong obtuse wing-like teeth.—Bot. Mag. t. 7314.

Upper Guinea. Sierra Leone, at the top of Sugarloaf Mountain, 3000 ft., *Elliot!*

The smallest species known. Flowered at Kew in August 1892.

11. **M. Millenii,** *Rolfe.* Pseudobulbs approximate, ovoid-oblong, 4-angled, 6–8 lin. long, 2-leaved. Leaves oblong-linear, obtuse, 2–3 in. long, 3–5 lin. broad. Scapes dwarf, 2–$2\frac{1}{2}$ in. long; rhachis flattened,

linear-oblong, subobtuse, scaberulous, 1–1¾ in. long, 3–4 lin. broad; margin obscurely crenulate. Bracts reflexed, suddenly narrowed from a broad base, acute, ½ lin. long. Flowers 2 lin. apart, reddish-brown, with a yellow dorsal sepal. Pedicels puberulous, 1¼ lin. long. Dorsal sepal spathulate-oblong, subobtuse, fleshy, 1⅓ lin. long; lateral ones ovate-triangular from a very broad base, acute, reflexed above the middle, 1 lin. long. Petals falcate-subulate, ⅔ lin. long. Lip recurved from a broader base, fleshy, ½ lin. long. Column ¼ lin. long; teeth short, obtuse.

Upper Guinea. Lagos, *Millen!*

12. **M. falcatum,** *Lindl. Gen. & Sp. Orch.* 47. Rhizome fairly stout. Pseudobulbs about ½ in. apart, ovoid or ovoid-oblong, obscurely 4-angled, ¾–1½ in. long, 2-leaved. Leaves oblanceolate-oblong, obtuse, 1½–3 in. long, 3–6 lin. broad. Scapes suberect, 5–7 in. long, with several loose basal sheaths; rhachis linear-oblong, somewhat falcate, acute, 2–4 in. long, 3–4 lin. broad; margins thin. Bracts reflexed, triangular-oblong from a broad base, acute, 1–1¼ lin. long. Dorsal sepal subspathulate-oblong, obtuse, 2½ lin. long; lateral ones triangular-ovate, subobtuse; apex reflexed, somewhat oblique, 1½ lin. long. Lip triangular-oblong, obtuse, ¾ lin. long. Column stout, ⅓ lin. long; teeth short, triangular-oblong, obtuse. Petals falcate-linear, subobtuse, 1 lin. long. Lip triangular-oblong, obtuse, ¾ lin. long. Column stout, ⅓ lin. long; teeth short, triangular-oblong, obtuse.—Lindl. Bot. Reg. t. 989; C. Morr. in Ann. Sc. Nat. sér. 2, xix. 91; Ridl. in Bolet. Soc. Brot. v. 198. *Bulbophyllum falcatum*, Reichb. f. in Walp. Ann. vi. 258.

Upper Guinea. Sierra Leone, *Don! Afzelius!* Lagos, *Moloney!*
Lower Guinea. Angola: Angolares, *Quintas* (ex *Ridley!*).

13. **M. Clarkei,** *Rolfe in Kew Bulletin*, 1891, 198. Rhizome stout, creeping. Pseudobulbs 2 in. apart, broadly oblong, acutely 4-angled, 1 in. long, ¾ in. broad, 2-leaved. Leaves oblong, obtuse, 2½–2¾ in. long, ¾–1 in. broad. Scape 6½ in. long; rhachis falcate-ensiform, obscurely repand-crenulate, rather thin, 4 in. long, 4–5 lin. broad. Bracts reflexed, broadly triangular, acute, 1½ lin. long. Flowers 2–3 lin. apart, green, much speckled with purple-brown. Dorsal sepal subulate-linear, subacute, scaberulous, 3½–4 lin. long; lateral ones falcate-ovate, acuminate, 2½ lin. long. Petals falcate-linear, obtuse, 2 lin. long. Lip recurved; base ovate; apex linear, obtuse, 1 lin. long. Column stout, ⅓ lin. long; teeth short, acute.

West Tropical Africa. Without locality, cultivated specimens!
Originally flowered in the collection of Major Trevor Clarke in 1891.

14. **M. melanorrhachis,** *Reichb. f. in Gard. Chron.* 1875, iv. 162. Rhizome fairly stout. Pseudobulbs subapproximate, ovoid-tetragonous, 9 lin. long, 2-leaved. Leaves lanceolate, obtuse, 1½–2¾ lin. long, 2½–5 lin. broad. Scape 2 in. long, with a few basal sheaths; rhachis oblong or obovate-oblong, obtuse, thin, obscurely crenulate, slightly scaberulous,

16 lin. long, 5 lin. broad. Bracts reflexed, ovate-triangular acute, 1–1¼ lin. long. Flowers 2 lin. apart. Pedicels 2 lin. long, velvety. Dorsal sepal oblong, subobtuse, 2¼ lin. long; lateral ones subfalcate-triangular, acute, 1½ lin. long; apex reflexed. Petals falcate-linear, acute, 1¼ lin. long. Lip oblong, acute, from a very broad base, ¾ lin. long. Column ⅓ lin. long, with very broad, obtuse, wing-like teeth.—*Bulbophyllum melanorrhachis*, Reichb. f. l. c. in note.

Upper Guinea. Sierra Leone, cultivated specimens!

Flowered at Kew in 1860, and in the collection of W. Wilson Saunders in 1872.

15. **M. pusillum,** *Rolfe in Kew Bulletin*, 1894, 362. Pseudobulbs ovoid-oblong, 4-angled, 1–1¼ in. long, 2-leaved. Leaves linear-oblong, obtuse, 3 in. long, ½ in. broad. Scapes about 4 in. long, with a few membranous sheaths; rhachis short, compressed, obscurely crenulate, unequal-sided, 1½ in. long, 4 lin. broad, light green, densely speckled with purple-brown. Bracts ovate, subacute, spreading, 1½ lin. long. Flowers a little darker than the rhachis. Dorsal sepal linear, subobtuse, recurved, 3½ lin. long; lateral ones broadly ovate, falcately incurved, velvety on the face, 1½ lin. long; apex attenuate. Petals very narrow, recurved, 2½ lin. long. Lip broad at the base, narrow, obtuse and recurved above, 1 lin. long. Column short, margined, without teeth.

East Tropical Africa. Without locality, cultivated specimen!

Flowered in the Royal Botanic Garden, Glasnevin, in 1895.

16. **M. tentaculigerum,** *Reichb. f. in Flora*, 1878, 78 *in note.* Pseudobulbs 4-angled. Leaves cuneate-ligulate, subacute. Scapes with as many as five sheaths, the upper ones large and loose; rhachis leaf-like, variegated, smooth. Flowers arranged in eccentric lines, brown and yellow. Bracts oblong-ligulate, acute or acuminate, at length deflexed. Dorsal sepal ligulate, acute; lateral ones oblong, acuminate. Petals filiform, as long as the sepals, with spathulate apex. Lip ancipitous, sigmoid, with a pair of erect, triangular auricles at the base. Column elongate, acute at both sides of the apex; base winged.—Durand & Schinz, Conspect. Fl. Afr. v. 16. *Bulbophyllum tentaculigerum,* Reichb. f. in Flora, 1878, 77.

Upper Guinea. Cameroons: at Mopanza, on lava at 5000–6000 ft., *Kalbreyer.*

Only known to me from the original description, but said to be allied to *M. Melleri*, Hook. f.

17. **M. Melleri,** *Hook. f. in Bot. Mag. sub t.* 5936. Rhizome creeping, stout and woody. Pseudobulbs ¾–1¼ in. apart, oblong, strongly 5-angled, 1–1¼ in. long, 2-leaved. Leaves oblong or elliptical-oblong, obtuse, 1–2¼ in. long, 5–9 lin. broad. Scapes suberect, 3 in. long, with several loose, tubular-spathaceous, obtuse sheaths; rhachis linear-oblong, rather fleshy, ¾–1 in. long, 2–3 broad. Bracts broadly ovate, subobtuse, spreading, 1½–2 lin. long, 2½–3 lin. apart. Sepals triangular. Petals linear, incurved, obtuse. Lip ancipitous; base with rounded auricles. Column trigonous, with tridentate apex and a keel extending to the base.—*Bulbophyllum Melleri*, Reichb. f. in Flora, 1878, 78.

Mozamb. Dist. British Central Africa: Mt. Chiradzulu, at Namalowe, 2000–2500 ft., on rocks and trees, *Meller !* Mt. Mlanje, *McClounie*, 23 !

The description of the flowers is taken from Reichenbach, none now remaining on the type specimens preserved at Kew. The Mlanje specimens consist of flowering racemes only, but apparently belong to the same species.

18. **M. Bufo,** *Lindl. in Bot. Reg.* 1841, *Misc.* 42. Rhachis elongate-linear, acute, much flattened, 8½ in. long, 6–7 lin. broad; margin obscurely repand-crenulate, green. Bracts reflexed, linear-oblong from a broadly triangular base, subobtuse, 2 lin. long. Flowers speckled, 8–10 lin. apart, somewhat pubescent. Dorsal sepal oblong-lanceolate, acute or acuminate, 3½ lin. long; lateral ones with broadly triangular base, lanceolate-acuminate above, 3 lin. long, 2½ lin. broad at the base. Petals lanceolate-oblong, acute, ¾ lin. long. Lip flat, 2 lin. long, 1½ lin. broad, purple; base broadly ovate-orbicular; apex oblong, subobtuse, reflexed. Column very stout, ½ lin. long; teeth oblong, subobtuse, ¼ lin. long.—Lindl. in Gard. Chron. 1841, 348, with fig. *Bulbophyllum Bufo*, Reichb. f. in Walp. Ann. vi. 258.

Upper Guinea. Sierra Leone, *Loddiges*, cultivated specimen!

Described from a single inflorescence, which flowered in Messrs. Loddiges' Nursery in 1841. Nothing further is yet known of the species.

An inflorescence of the very different species, *M. triste*, Rolfe, is attached to the same sheet in Lindley's Herbarium, and appears to have been added afterwards, but without information as to its origin.

19. **M. Lindleyi,** *Rolfe.* Pseudobulbs approximate, ovoid-oblong, 1½–2 in. long, 2-leaved. Leaves linear-oblong, obtuse, 3½–4 in. long, 6–8 lin. broad. Scape suberect, 1½ ft. long; rhachis ensiform-falcate, very thin, light green, 10–11 in. long, ½ in. broad in the middle; margin obscurely repand-crenate. Bracts reflexed, subulate-linear from a broad base, 1½ lin. long. Flowers 5–6 lin. apart, yellowish-green, speckled with brown. Pedicels 2½ lin. long. Dorsal sepal erect, spathulate, obtuse or minutely apiculate, obscurely crenulate, 3½ lin. long, 1½ lin. broad; lateral ones reflexed, basal half broadly triangular-ovate, nearly 2 lin. long; apex linear, subacute. Petals linear-oblong, subobtuse, somewhat falcate, ¾ lin. long. Lip recurved, linear-oblong from a somewhat broader base, obtuse, 1 lin. long. Column broad, ⅓ lin. long; margin winged; teeth short, subacute.—*Megaclinium maximum*, Lindl. Bot. Reg. t. 1959 (not of Gen. & Sp. Orch.); Bot. Mag. t. 4028; Hook. Cent. Orch. 16, t. 3 (*flaccidum* on plate). *Bulbophyllum maximum*, Reichb. f. in Walp. Ann. vi. 259.

Upper Guinea. Sierra Leone, *Loddiges*, cultivated specimen!

This species has been confused by Lindley with his previously described *M. maximum*, and hence requires a new name. It is only known by the figure and an inflorescence in Lindley's Herbarium. The locality can only be assumed from his remarks, but is probably correctly given here.

20. **M. platyrhachis,** *Rolfe.* Rhizome stout and woody. Pseudobulbs 1 in. or more apart, oblong, strongly 4-angled, 1½–3 in. long, 2-leaved. Scapes 8–10 in. long; rhachis very broadly dilated, 4–6 in.

long, 1 in. broad; margin crenulate. Bracts 2 lin. apart, ovate, acute, deflexed and with recurved margins, about 1 in. long.

Mozamb. Dist. British Central Africa, cultivated specimen!

Described from a plant imported by Mr. J. O'Brien.

A most distinct and remarkable species, whose affinity remains doubtful until flowers are known.

7. **ANCISTROCHILUS,** Rolfe.

Sepals subequal, spreading, the lateral ones partially united at the base to the very short foot of the column. Petals smaller than the sepals and narrower at the base, otherwise similar. Lip attached to the short foot of the column, subsaccate at the base, strongly 3-lobed; side lobes erect at the sides of the column, oblong, obtuse; front lobe narrowly triangular at the base, long attenuate above, recurved, twice as long as the side lobes; disc with slightly raised lines, the middle one more prominent at the base of the front lobe. Column clavate, rather long, slightly curved; wings short and rounded; base extended into a short horizontal foot. Anther operculate, 4-celled; pollinia 8, ovoid, united to a single appendage as long as themselves; anther-case apiculate.—An erect herb, with depressed orbicular pseudobulbs, lanceolate, acute, plicate leaves, and erect 2- to 3-flowered scapes a little shorter than the leaves.

A curious little monotype, originally referred to the Asiatic genus *Pachystoma* by Reichenbach, with which, as pointed out in the Botanical Magazine, it neither accords in floral character nor in the structure of the pollinia. It belongs to the same group, but is readily distinguished by the pollinia being united to a single stipitate appendage, as well as by the remarkable lip and spreading segments. The supposed "gland" figured in the Botanical Magazine is only a viscid secretion, and not analogous to the gland of the tribe *Vandeæ*.

1. **A. thomsonianus,** *Rolfe.* Pseudobulbs seated on a creeping rhizome, orbicular, depressed, nearly 1 in. thick, covered with membranous scales. Leaves 1 or 2, lanceolate, acute, plicate, membranous, 6–8 in. long. Peduncles 1 or 2 from the base of each pseudobulb, ascending, slender, pubescent, 4–6 in. high, 2- to 3-flowered. Bracts ovate-lanceolate, acuminate, sheathing, 5–7 lin. long. Pedicels 7–8 lin. long, pubescent. Flowers large, white with a purple lip. Sepals oblong-lanceolate, acuminate, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long. Petals a little shorter than the sepals and narrower at the base. Lip deeply 3-lobed; side lobes oblong, obtuse, 4–5 lin. long; front lobe attenuate-linear from a narrow base, 9–12 lin. long. Column 7–8 lin. long.—*Pachystoma thomsonianum,* Reichb. f. in Gard. Chron. 1879, xii. 582, 624, 625, fig. 102, 103; 1882, xviii., 501, fig. 87; Reichb. f. Xen. Orch. iii. 35, t. 213; Bot. Mag. t. 6471; Orchidophile, 1882, 427; Gartenfl. xxx. 324, t. 1061; Will. Orch. Alb. v. t. 220; Veitch, Man. Orch. vi. 4, with fig. *Ipsea thomsoniana,* Pfitz. in Engl. & Prantl, Nat. Pflanzenf. ii. Abth. 6, 154, fig. 158.

Upper Guinea. Mountains of Old Calabar, on trees, at a moderate elevation, not far from the coast, *Kalbreyer,* cultivated specimens!

8. **PHAIUS,** Lour.; Benth. et Hook. f. Gen. Pl. iii. 512.

Sepals free, subequal, spreading or suberect. Petals like the sepals or narrower. Lip erect, concave or cucullate, entire or somewhat 3-lobed; side lobes embracing the column; base spurred or saccate. Column long, clavate; apex 2-angled; base not prolonged into a foot. Anther operculate, incumbent, distinctly 2-celled; pollinia 8, obovate or oblong, somewhat laterally compressed, united at the base by a viscid appendage. Capsules ellipsoidal-oblong.—Tall herbs, terrestrial or rarely epiphytic. Base of stem sometimes pseudobulbous. Leaves long petioled; limb elliptical to lanceolate-oblong, acute or acuminate, plicate. Scapes basal or lateral, mostly erect. Flowers usually large and showy. Bracts lanceolate or ovate-lanceolate.

A genus of about 20 species, extending from India and China to Australia, with four Mascarene representatives and a single West African one.

1. **P. Mannii,** *Reichb. f. Otia Bot. Hamb.* ii. 118. Rhizome stout. Leaves long petioled, oblong- or elliptical-lanceolate, acute, 1 ft. long, $2\frac{1}{2}$–3 in. broad; petioles 6–8 in. long, somewhat dilated at the base. Scape about as tall as the leaves; raceme about 6–8-flowered. Bracts lanceolate, acuminate, $1\frac{1}{2}$ in. long, deciduous. Pedicels 7–8 in. long. Sepals oblong-lanceolate, acuminate, $1\frac{3}{4}$ in. long, 4–5 lin. broad. Petals similar but a little broader. Lip 3-lobed, $1\frac{1}{2}$ in. long; side lobes narrowly oblong, acute; front lobe oblong, acute or apiculate, much longer than the side lobes; spur slender, 6–8 lin. long. Column clavate, 10 lin. long; wings rounded.

Lower Guinea. Gaboon: Sierra del Crystal, *Mann*, 1624!

9. **CALANTHE,** R. Br.; Benth. et Hook. Gen. Pl. iii. 520.

Sepals subequal, free, usually widely spreading. Petals like the sepals or narrower. Lip usually more or less adnate to the column; limb spreading, 3-lobed, with the terminal one often deeply bilobed, disc variously callous or lamellate; base mostly extended into a slender spur (in the African ones invariably so). Column short, without a foot; wings usually united to the sides of the column. Anther subterminal, operculate, incumbent, 2-celled; pollinia 8, oblong or obovate, somewhat compressed, the caudicles often somewhat attenuate and united by a viscid appendage. Capsules elliptical-oblong.—Terrestrial herbs, with short leafy stems, sometimes pseudobulbous at the base. Leaves 2 to several, petiolate; limb elliptical- to oblong-lanceolate, acute or acuminate, plicate. Scapes erect from the rhizome, often tall, with a number of sheaths towards the base. Flowers in dense or loose racemes, usually showy. Bracts lanceolate or ovate-lanceolate.

A genus of about 70 species, most numerous in Tropical Asia, exteuding to Japan and Australia, and sparingly represented in Africa, the West Indies, and Central America.

Side lobes of lip auriculate, scarcely 1 lin. long.

Side lobes of lip as broad as long; claw triangular at the base	1. *C. corymbosa.*
Side lobes of lip longer than broad; claw oblong at the base	2. *C. delphinioides.*
Side lobes of lip linear or oblong, 2 lin. long . . .	3. *C. Volkensii.*

1. **C. corymbosa,** *Lindl. in Journ. Linn. Soc.* vi. 129. Rhizome stout. Leaves oblong- to elliptical-lanceolate, acute or acuminate; blade 6–12 in. long, 1¾–4 in. broad; petioles 4–6 in. long, dilated at the base. Scape 1¼–2¼ in. long; raceme subcorymbose or ultimately elongate; rhachis pubescent. Bracts lanceolate, acute, 7–9 lin. long. Pedicels 1–1¼ in. long. Flowers mauve, white and purple, or violet. Sepals lanceolate-oblong, acute or acuminate, 6–8 lin. long. Petals very similar to the sepals. Lip adnate to the short column, 5–6 lin. long, with a pair of short, rounded, auriculate side lobes at the base; front lobe obcordate, narrowed at the base, truncate; disc with a triangular warty crest at the base; spur slender, somewhat curved, 6–9 lin. long. Capsule clavate-oblong, 1 in. long.—Rolfe in Bolet. Soc. Brot. ix. 139.

Upper Guinea. Cameroons, 5000 ft., in forest, *Johnston*, 107! Fernando Po, 5000 ft., *Mann*, 392!

Lower Guinea. Island of St. Thomas, 3600 ft., *Quintas*, 1!

The specimen from St. Thomas is in fruit only, but apparently belongs to the same species.

2. **C. delphinioides,** *Kränzl. in Engl. Jahrb.* xvii. 55. Rhizome stout. Leaves elliptical-oblong, acute, 6–9 in. long, 3–4 in. broad; petioles 4–6 in. long. Scape 1¼ ft. long; raceme 3 in. long, about 10–12-flowered; rhachis pubescent. Bracts oblong-lanceolate, acute, 4–6 in. long. Pedicels 1 in. long. Sepals and petals elliptical-oblong, acute or apiculate, membranous, 6 lin. long. Lip adnate to the short column, 5–6 lin. long, with a pair of small, roundish, oblong, auriculate side lobes at the base; front lobe bilobed, very narrow at the base, nearly truncate; disc with a linear-oblong, wart-like crest at the base; spur slender, slightly curved, 5–6 lin. long.

Upper Guinea. Cameroons: near Mimbia, 3600 ft., *Preuss*, 1061!

Very closely allied to the preceding.

3. **C. Volkensii,** *Rolfe.* Rhizome stout. Leaves elliptical- to oblong-lanceolate, acute, 12–14 in. long, 4–4¼ in. broad; petioles 5–7 in. long. Scape 1 ft. high: raceme short, about 12-flowered; rhachis pubescent. Bracts lanceolate to ovate-lanceolate, subacute, pubescent, 4–7 in. long. Pedicels 1–1¼ in. long. Sepals lanceolate-oblong, acute or apiculate, 7–8 lin. long; margins undulate. Petals oblong, subacute or apiculate, a little smaller than the sepals. Lip adnate to the short column; side lobes oblong, obtuse, 2 lin. long; front lobe obcordate-bilobed; lobes truncate; disc with three verrucose lines at the base; spur slender, 14–16 lin. long.—*C. sylvatica var. natalensis*, Kränzl. in Engl. Pfl. Ost-Afr. C. 156 (not of Reichb. f.).

Mozamb. Dist. German East Africa: Kilimanjaro; Marangu, 6500 ft., *Volkens*, 2263!

Distinguished from the South African *C. natalensis*, Reichb. f., amongst other characters, by its longer, more slender spur.

10. **EULOPHIA,** R. Br.; Benth. et Hook. f. Gen. Pl. iii. 535.

Sepals subequal, free, subconnivent or spreading, the lateral ones sometimes adnate to the foot of the column. Petals like the sepals or a little broader, sometimes differently coloured. Lip continuous with the base or foot of the column, sometimes a little contracted above the base, trilobed or entire; base variously saccate or calcarate; side lobes erect or sometimes nearly obsolete; the middle one spreading or recurved; disc variously cristate or lamellate, rarely smooth. Column short, stout, the base sometimes more or less produced into a foot; clinandrium or anther-bed oblique, erect, entire. Anther terminal, operculate, incumbent, semiglobose, conical or rarely acuminate; apex more or less bilobed, imperfectly 2-celled; pollinia 4, ovoid, united in pairs, affixed to a broad stipes and gland. Capsules ovoid or oblong, rarely elongated, with prominent thickened angles.—Terrestrial herbs or rarely epiphytes. Stems leafy at the base, creeping, often thickened into rhizomes, sometimes forming aerial pseudobulbs. Leaves distichous, often narrow and elongated, usually plicate, rarely conduplicate and coriaceous. Scapes or peduncles variously sheathed below, racemose or loosely paniculate above. Flowers small or medium-sized, usually lax. Bracts small or narrow.—*Cyrtopera*, Lindl. Gen. & Sp. Orch. 189. *Eulophidium*, Pfitz. Entw. Nat. Anordn. Orch. 87.

A genus of about 180 species, widely diffused through the tropics, but most numerous in Africa, and rare in Malaya, Polynesia, Australia and Tropical America. There is a complete passage between the species with and those without a foot, so that it seems impossible to retain *Cyrtopera* as a distinct genus. A few species almost form a transition to *Lissochilus*, though most of the species of that exclusively African genus are well characterised by the reflexed sepals and much broader petals.

Spur short or obtuse.

Pseudobulbs monophyllous; leaves coriaceous, not plicate, irregularly variegated . . . . . 1. *E. Ledienii.*

Pseudobulbs or stems with two or more plicate, green leaves.

Leaves ovate-oblong, abruptly narrowed below.

Lip 2 lin. broad . . . . . 2. *E. latifolia.*

Lip 6 lin. broad . . . . . 3. *E. saundersiana.*

Leaves linear to elliptical-lanceolate, attenuate below.

Spur clavate or oblong.

* Flowers paniculate or in rather long lax racemes.

Limb of lip shorter than the clavate spur.

Limb of lip concave, truncate, and ciliate . 4. *E. gracilis.*

Limb of lip convex, fleshy and glabrous . 5. *E. leonensis.*

Limb of lip longer than the spur.

† Sepals 2–4, or rarely 5–6 lin. long.

- Flowers racemose.

–Lip as broad as long . . . . 6. *E. stricta.*

Lip longer than broad.

Petals nearly or quite as long as the sepals.

Raceme 1 ft. long . . . 7. *E. Dusenii.*

Raceme under $\frac{1}{2}$ ft. long.

Sepals under 2 lin. long . . 8. *E. Milnei.*

Sepals $2\frac{1}{2}$ lin. long . . . 9. *E. lutea.*
Sepals over 3 lin. long.
Flowers pendulous . . 10. *E. Monile.*
Flowers nearly horizontal . 11. *E. Protearum.*
Petals only half as long as the sepals 12. *E. brevipetala.*
Flowers paniculate.
Epiphytic, with ovoid-oblong pseudobulbs and lanceolate leaves . . 13. *E. lurida.*
Terrestrial, with linear leaves.
Bracts ovate-lanceolate . . . 14. *E. Elliotii.*
Bracts linear-lanceolate.
Disc with 3 keels (Western species) 15. *E. Smithii.*
Disc with 5 keels (Eastern species) 16. *E. callichroma.*

†† Sepals 7–12 lin. long.
Flowers paniculate.
Leaves 1 in. or less broad.
Sepals 6–7 lin. long . . . 17. *E. aloifolia.*
Sepals 9–12 lin. long.
Leaves 12–16 in. long. . . 18. *E. Petersii.*
Leaves 3–8 in. long.
Leaves slightly curved; front lobe of lip 3 lin. broad . 19. *E. Phillipsiæ.*
Leaves strongly recurved; front lobe of lip 5 lin. broad . 20. *E. Coleæ.*
Leaves 2 in. or more broad. . . 21. *E. baginsensis.*
Flowers racemose.
Bracts shorter than the pedicels.
Lip 7–9 lin. long.
Petals nearly as long as the sepals 18. *E. Petersii.*
Petals much shorter than the sepals 22. *E. longisepala.*
Lip about 5 lin. long . . . 23. *E. Nyasæ.*
Bracts as long as or longer than the pedicels . . . . . 24. *E. euglossa.*
Lobes of lip rounded or obtuse.
Scapes appearing with the leaves . 25. *E. Kirkii.*
Scapes appearing before the leaves 26. *E. stachyodes.*
Lobes of lip acute.

** Flowers in short lax racemes.
Leaves borne with the scapes, elongate-linear.
Disc of lip densely barbate . . . 27. *E. crinita.*
Disc of lip sparingly barbate on the nerves . 28. *E. venulosa.*
Leaves appearing after the scapes.
Sepals narrow or under $\frac{1}{2}$ in. broad.
Spur scarcely 1 lin. long.
Keels of lip slightly crenulate . . 29. *E. adenoglossa.*
Keels of lip fimbriate . . . 30. *E. Antunesii.*
Spur 2 or more lin. long.
Disc of lip with a few filiform appendages on the thickened nerves.
Front lobe of lip not or scarcely broader than the sepals.
Sepals 2–3 lin. broad.
Petals broader than the sepals.
Disc of lip with tuberculate nerves . . . 31. *E. tanganyikensis.*

Disc of lip with crenulate keels or lamellæ . . 32. *E. monticola.*
Petals not or scarcely as broad as the sepals.
Front lobe of lip scarcely twice as broad as the side lobes 33. *E. lanceolata.*
Front lobe of lip three times as broad as the side lobes 34. *E. aristata.*
Sepals 5–6 lin. broad . . . 35. *E. præstans.*
Front lobe of lip twice as broad as the sepals.
Raceme 3–5-flowered . . . 36. *E. Holubii.*
Raceme loosely many-flowered . 37. *E. hereroensis.*
Disc of lip densely villose.
Disc of lip 3-keeled at the base . 38. *E. Welwitschii.*
Disc of lip 2-keeled at the base . 39. *E. renschiana.*
Sepals 8–9 lin. broad . . . . 40. *E. macrantha.*

*** Flowers in dense, often somewhat abbreviated racemes.
Scapes stout; leaves broadly lanceolate.
Racemes 4–6 in. long.
Sepals 10–12 lin. long . . . . 41. *E. dichroma.*
Sepals about 8 lin. long . . . . 42. *E. abyssinica.*
Racemes subcorymbose, scarcely 2 lin. long . 43. *E. milanjiana.*
Scapes slender; leaves linear or narrow.
Racemes densely capitate . . . . 44. *E. Mechowii.*
Racemes subcorymbose . . . . 45. *E. Nuttii.*
Racemes somewhat elongated.
Front lobe of lip about 5 lin. broad . 46. *E. speciosa.*
Front lobe of lip under 3 lin. broad.
Raceme about 8–9-flowered . . 47. *E. Carsoni.*
Raceme many-flowered.
Lip with distinct oblong side lobes.
Disc with few slender appendages on the nerves . . . 48. *E. subulata.*
Disc with many stout appendages on the nerves . . . 49. *E. Missionis.*
Lip with short rounded side lobes . 50. *E. Buchanani.*

Spur conical, saccate or obsolete.
*Terrestrial herbs.
Leaves elongate-linear, under $\frac{1}{2}$ in. broad.
Sepals 9–10 lin. or less long.
Petals twice as broad as the sepals.
Lip obscurely trilobed . . . 51. *E. Bainesii.*
Lip trifid, with oblong side lobes . 52. *E. flavopurpurea.*
Petals not twice as broad as the sepals.
Sepals 3–4 lin. long.
Sepals nearly orbicular . . . 53. *E. Schweinfurthii.*
Sepals triangular-ovate . . . 54. *E. holstiana.*
Sepals 5–9 lin. long.
Sepals with narrowed acute apex.
Nerves of lip strongly barbate . 55. *E. Shupangæ.*
Nerves of lip sparsely barbate . 56. *E. Johnstoni.*
Nerves of lip pubescent . . 57. *E. Thomsoni.*
Sepals with broad apiculate apex . 58. *E. lata.*

Sepals 1 in. or more long.
Sepals and petals linear . . . . 59. *E. Walleri.*
Sepals and petals lanceolate . . . 60. *E. aurantiaca.*
Leaves lanceolate, 1 in. or more broad.
Spur shortly calcarate . . . . 61. *E. manganjensis.*
Spur broadly saccate . . . . 62. *E. Woodfordii.*
** Epiphytes with distinct pseudobulbs.
Flowers on a long slender scape . . . 63. *E. flexuosa.*
Flowers in axillary fascicles . . . . 64. *E. tayloriana.*
Spur attenuate, $\frac{3}{4}$–1 in. long . . . . . 65. *E. guineensis.*

1. **E. Ledienii,** *Stein in Gartenfl.* 1888, 609 (*in note*). Pseudobulbs fusiform-oblong, $1\frac{1}{2}$ in. or more long, 1-leaved. Leaves oblong-lanceolate, subobtuse, 6–15 in. long. 1–$1\frac{3}{4}$ in. broad, fleshy, coriaceous, whitish-grey with irregular bands of green spots; base attenuate. Scapes $\frac{3}{4}$–$1\frac{1}{4}$ ft. high, with two or three sheaths; racemes lax, 3–6 in. long. Bracts linear-lanceolate, acuminate, $2\frac{1}{2}$–5 lin. long. Pedicels 4–6 lin. long. Flowers pale brownish-green with two pale purple blotches on the sides of the lip. Sepals oblong-lanceolate, acute, 4–5 lin. long. Petals oblong, acute, 4–5 lin. long. Lip trilobed, 3 lin. long; side lobes broadly rounded; front lobe bilobed, with obovate-rounded lobes; disc smooth; spur clavate, 2 lin. long. Column broad, $1\frac{1}{2}$ lin. long. Capsule elliptical-oblong, 1–$1\frac{1}{2}$ in. long.—N. E. Br. in Kew Bulletin, 1889, 90; Rolfe in Gard. Chron. 1892, xii. 583. *Eulophia maculata*, Stein in Gartenflora, 1888, 609, t. 1285 (not of Reichb. f.); Durand & Schinz, Conspect. Fl. Afr. v. 23 (in part). *Eulophidium maculatum*, Pfitz. in Engl. & Prantl. Pflanzenf. ii. Abth. 6, 188 (in part).

Upper Guinea. Ashantee, *Sander*, cultivated specimen!

Lower Guinea. St. Thomas, *Van Houtte*, cultivated specimen! Congo, *Ledien*, cultivated specimen. Angola: Golungo Alto, in dense woods near river Mata de Quisuculo, *Welwitsch*, 665!

Quite distinct from the Brazilian *E. maculata*, Reichb. f., with which it has been confused.

2. **E. latifolia,** *Rolfe in Bolet. Soc. Brot.* ix. 139. Pseudobulbs fusiform, $1\frac{1}{2}$–$2\frac{1}{4}$ in. long, 2-leaved. Leaves petiolate, ovate-oblong, subacute, 2–$2\frac{1}{4}$ in. long, $1\frac{1}{4}$–$1\frac{1}{2}$ in. broad; petioles 1–$1\frac{1}{2}$ in. long. Scapes 6–8 in. high, with several sheaths, paniculate with short branches above; flowers numerous and rather crowded, white with purple-striped lip. Bracts lanceolate, acuminate, $1\frac{1}{2}$–2 lin. long. Pedicels 3–4 lin. long. Sepals and petals lanceolate-linear, subobtuse, 3–4 lin. long. Lip trilobed, $3\frac{1}{2}$ lin. long; side lobes rounded; front lobe broadly rounded, truncate or emarginate; disc smooth or nearly so; spur clavate, $1\frac{1}{2}$ lin. long. Column clavate, $1\frac{1}{2}$ lin. long.

Lower Guinea. Island of St. Thomas, *Quintas*, cultivated specimens!

Originally flowered in the Coimbra Botanic Garden in 1889.

3. **E. saundersiana,** *Reichb. f. in Bot. Zeit.* 1866, 378. Pseudobulbs ovoid-oblong, $2\frac{1}{2}$–6 in. long, 2-leaved. Leaves petiolate, elliptical-oblong, subacute, 5–9 in. long, 2–3 in. broad; petioles 4–6 in. long.

Scapes erect, 1–2 ft. high; racemes 4–6 in. long, many-flowered. Bracts ovate-lanceolate, acute, 1–3 lin. long. Pedicels 5–8 lin. long. Flowers green, petals and lip with a few broad black lines, centre of the sepals black. Sepals and petals broadly elliptical-oblong, obtuse, 5–6 lin. long. Lip 5–6 lin. long, four-lobed; side lobes broad, rounded; front pair similar but larger; disc smooth, with a broad erect bilobed tubercle at the base; spur clavate- or subclavate-oblong, 1½–2 lin. long. Column stout.—Reichb. f. in Flora, 1878, 77; Xen. Orch. ii. 174, t. 173. *Lissochilus barombiensis*, Kränzl. in Engl. Jahrb. xvii. 52.

Upper Guinea. Lagos, *Millen*, 150! Ashantee, Assin-yan-Coomassie, *Cummins*, 222! Cameroons, *Preuss*, 96! *Kalbreyer* (ex *Reichenbach*). And a cultivated specimen without locality!

Flowered at Kew in 1864, and in the collection of W. Wilson Saunders about the same time, being described from the latter source, and said to have been introduced by Mann. *Lissochilus barombiensis*, Kränzl., is clearly identical.

4. **E. gracilis,** *Lindl. Bot. Reg. t.* 742. Stems pseudobulbous at the base, 1–2½ in. long. Leaves linear-lanceolate, acute, attenuate and narrow at the base, 1–1½ ft. long, ¾–1 in. broad. Scapes 1½–2 ft. high; racemes 6–9 in. long, lax. Bracts lanceolate, acuminate, 4–7 lin. long. Pedicels 6–9 lin. long. Sepals lanceolate-oblong, acute, 5–7 lin. long, 2½ lin. broad. Petals rather smaller than the sepals. Lip shortly and broadly funnel-shaped, truncate, deeply fimbriate, with an oblong tooth near the apex; spur 4 lin. long, conical at the base, constricted in the middle, and clavate at the apex. Column stout, 2 lin. long, puberulous. —*Limodorum ciliatum*, Schum. & Thonn. Beskr. Guin. Pl. 400. *Galeandra gracilis*, Lindl. Gen. & Sp. Orch. 187; Journ. Linn. Soc. vi. 133; Reichb. f. in Flora, 1878, 77; Kränzl. in Mitth. Deutsch. Schutzgeb. ii. (1889), 156. *Galeandra extinctoria*, Lindl. Gen. & Sp. Orch. 187. *Eulophia ciliata*, Reichb. f. in Walp. Ann. vi. 647; Durand & Schinz, Conspect. Fl. Afr. v. 20. *Eulophia Preussii*, Kränzl. in Engl., Jahrb. xvii. 54.

Upper Guinea. Sierra Leone: Bumban to Lokko, *Scott-Elliot*, 5732! 5738! Sugar-loaf Mountain, *Preuss*; Bagru River, *Mann*, 903! and without precise locality, *Don! Wilford!* Liberia, *Carder!* Lagos, cultivated specimen!

I fail to find any character in the description by which to separate *E. Preussii*, Kränzl.

5. **E. leonensis,** *Rolfe.* Rhizome and leaves not seen. Scape 1¾ ft. high, rather slender; raceme 10 in. long, lax, many-flowered. Bracts linear, acuminate, 2–3 lin. long. Pedicels 4–6 lin. long. Sepals elliptical-oblong, subobtuse, 3 lin. long. Petals broadly ovate, obtuse, 2½ lin. long. Lip with very short trilobed limb, 1½ lin. long; side lobes suborbicular; front lobe ovate-oblong, obtuse; disc with a very large fleshy callus; spur subclavate, obtuse, 2½ lin. long. Column stout, 1½ lin. long.

Upper Guinea. Sierra Leone: Bafodeya, in sandy soil on rocky hills, *Scott-Elliot*, 5536!

6. **E. stricta,** *Rolfe.* Leaves oblong-lanceolate, acute, 3–5 lin. long, 7–10 lin. wide. Scapes 2–2¼ ft. high, with a few short sheaths below; racemes 1 ft. long, lax, many-flowered. Bracts lanceolate or

ovate-lanceolate, acute, $1\frac{1}{2}$–4 lin. long. Pedicels 2–3 lin. long. Sepals oblong, subobtuse or apiculate, 4 lin. long, subattenuate at the base; lateral ones adnate to the short foot of the column. Petals elliptical-oblong, obtuse, $3\frac{1}{2}$ lin. long. Lip trilobed, $3\frac{1}{2}$ lin. long; side lobes quadrate; front lobe broadly oblong, obtuse, somewhat crenulate; disc with three thickened crenulate keels at the base and five to seven more slender ones above; nerves of the side lobes also somewhat thickened; spur conical-oblong, $1\frac{1}{2}$ lin. long. Column clavate, $2\frac{1}{2}$ lin. long, with a short foot.—*Lissochilus sp.*, Oliv. in Trans. Linn. Soc. ser. 2, ii. 349.

Nile Land. British East Africa: Kilimanjaro Expedition, 40–60 miles from the coast, *Johnston!*

This species has a distinct foot to the column, but otherwise seems allied to the preceding ones.

7. **E. Dusenii,** *Kränzl. in Engl. Jahrb.* xix. 254. Pseudobulbs aggregated, oblong or cylindrical, 2–$2\frac{3}{4}$ in. long. Leaves several, long petiolate, linear-lanceolate, acuminate, 28–30 in. long, 1–$1\frac{1}{4}$ in. broad. Scapes 2 ft. high, appearing with the leaves; base with several sheaths; racemes about 1 ft. long, many-flowered. Bracts linear-lanceolate, as long as or longer than the pedicels. Sepals lanceolate, acute. Petals lanceolate, acute, a little shorter and broader than the sepals. Lip 3-lobed; side lobes triangular, acute; front lobe obovate-oblong, obtuse; margins slightly crenulate; disc with very slightly elevated lines, velvety at the base; spur clavate, obtuse, a third as long as the lip. Column shorter by one-third than the lip, velvety.

Upper Guinea. Cameroons, *Dusen*, 264.

Only known to me from the original description, in which it is compared with the South African *E. clavicornis*, Lindl.

8. **E. Milnei,** *Reichb. f. Otia Bot. Hamb.* ii. 116. Rhizome rather slender, with several swollen joints, forming the bases of the stems. Leaves narrowly linear, acute, 4–8 in. long, 1 lin. broad. Scapes slender, erect, 9–12 in. long; racemes 2–3 in. long, lax. Bracts lanceolate, acuminate, $1\frac{1}{2}$–2 lin. long. Pedicels as long as the bracts. Sepals and petals lanceolate or linear-oblong, subacute or apiculate, $1\frac{1}{2}$–2 lin. long. Lip shortly clawed, trilobed, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. long; margin crenulate; side lobes divaricate, oblong, obtuse or subacute, $\frac{3}{4}$ lin. long; front lobe ovate or broadly rounded, obtuse or retuse, 1 lin. broad; disc with three thickened nerves, each bearing a few linear papillæ above the middle; spur $\frac{1}{2}$–$\frac{3}{4}$ lin. long, clavate or with inflated apex. Column stout, $\frac{3}{4}$ lin. long.—*E. gracillima*, Ridl. in Journ. Bot. 1886, 292.

Upper Guinea. Fernando Po and vicinity, *Milne!* Old Calabar, *Robb!* "Nimbo River. Benito Ground. Main Sand, *Milne*" (ex *Reichenbach*).

Remarkable for its very slender habit and narrow leaves.

9. **E. lutea,** *Lindl. in Journ. Linn. Soc.* vi. 132. Stems with a subglobose, corm-like base. Scapes 1–$1\frac{1}{4}$ ft. long, rather slender; racemes lax. Bracts lanceolate or linear-lanceolate, acute, $1\frac{1}{2}$–3 lin.

long. Pedicels $1\frac{1}{2}$–2 lin. long. Flowers yellow. Sepals and petals oblong or ovate-oblong, subacute, 2–$2\frac{1}{2}$ lin. long. Lip elliptical-oblong, trilobed, 2–$2\frac{1}{2}$ lin. long, $1\frac{1}{4}$ lin. broad; side lobes narrow and obtuse; front lobe broadly oblong, retuse or emarginate; nerves of disc five, each bearing a few suberect papillæ above the middle; spur oblong, obtuse, 1–$1\frac{1}{4}$ lin. long. Column stout, 1 lin. long.

Upper Guinea. Sierra Leone: Herimankuna, *Scott-Elliot*, 5248! Niger Territory: Nupe, in grassy valleys, *Barter*, 1480!

Leaves are absent from the specimens.

10. **E. Monile,** *Reichb. f. in Flora*, 1867, 105. Pseudobulbs thickened, superposed. Leaves linear, acuminate, rigid, with two tubular sheaths at the base. Scapes slender, over 1 ft. high; basal sheaths distant, subacute; racemes lax, few-flowered. Flowers drooping, white. Bracts linear-setaceous, longer than the deflexed pedicels. Sepals linear-ligulate, acute. Petals shorter and more obtuse. Lip cuneate-oblong, trilobed; side lobes obtusely angled; front lobe ovate or obovate, emarginate, crenulate; disc with three minutely crested keels below, and five barbate lamellæ on the front lobe. Spur clavate, not a third as long as the ovary. Capsule oblong, 5 lin. long.

Lower Guinea. Angola: Huilla; Morro de Monino, 5000 ft., among mosses, near river, *Welwitsch*, 709!

11. **E. Protearum,** *Reichb. f. in Flora*, 1867, 104. Rhizome thickened. Leaves linear-setaceous, cartilaginous. Scapes with two appressed nerved sheaths at the base, 9 in. high; racemes few-flowered. Flowers yellow, with a trace of red. Sepals oblong-ligulate, acute, 5 lin. long. Petals ovate-oblong, acute, 5 lin. long. Lip trilobed; side lobes obtusely angled; front lobe ovate, crenulate at the sides; disc with five keel-like nerves; spur clavate-cylindrical, $1\frac{1}{4}$ lin. long. Column cylindrical, apiculate.

Lower Guinea. Angola: Huilla; Lopollo and Monino, sandy grassy places in Proteaceous woods, *Welwitsch*, 719 (not 739, as cited by Reichenbach).

Of this species I have only seen a drawing, which is preserved in the British Museum.

12. **E. brevipetala,** *Rolfe.* Pseudobulbs ovoid-oblong, 1 in. long. Leaves (immature) fascicled, linear, acute, very short. Scapes slender, 1–$1\frac{3}{4}$ ft. high; racemes lax, few-flowered. Bracts lanceolate, acute, 1–$1\frac{1}{2}$ lin. long. Sepals lanceolate, acute, 4–5 lin. long. Petals oblong or obovate-oblong, subobtuse, 2–$2\frac{1}{2}$ lin. long, strongly 5–7-nerved. Lip 3–$3\frac{1}{2}$ lin. long, trilobed; side lobes narrow, obtuse; front lobe broadly elliptical-oblong, obtuse, undulate; disc three-keeled at the base, five-keeled above, nerves all fimbriate-villous. Column clavate, $1\frac{1}{2}$ lin. long.

Upper Guinea. Sierra Leone: 600 ft. above Falaba, in a dry wood on top of a schistose hill, *Scott-Elliot*, 5224!

Remarkable for the short petals.

13. **E. lurida,** *Lindl. Gen. & Sp. Orch.* 182. Epiphytic. Pseudo-

bulbs oblong to ovoid-oblong, 2–2½ lin. long, 4–5-leaved. Leaves lanceolate or elongate-lanceolate, acute or acuminate, 4–10 in. long, 5–11 lin. broad. Scapes 1–2 ft. long, loosely paniculate above; branches 2–9 in. long. Bracts linear-lanceolate, acute, ¾–1 lin. long. Pedicels 3–9 lin. long. Sepals oblong or subspathulate-oblong, obtuse or apiculate, 2½–3 lin. long, dull lurid purple. Petals oblong, obtuse or apiculate, as long as the sepals, but broader, and a little paler in colour. Lip trilobed, 2½ lin. long, 2 lin. broad, yellow; side lobes obtuse or rounded; front lobe broadly obcordate or obovate; disc with a pair of oblong flattened tubercles near the base; spur linear-oblong, more or less bifid at the apex, spreading or incurved as the flowers become old, a little shorter than the lip. Column stout, 1–1½ lin. long; basal angles prominent and pubescent.—Lindl. Bot. Reg. t. 1821; Journ. Linn. Soc. vi. 132. *Limodorum luridum*, Pers. Syn. Pl. ii. 521. *Angræcum luridum*, Lindl. in Trans. Hort. Soc. Lond. vi. 86. *Eulophia longicollis*, Lindl. in Journ. Linn. Soc. vi. 132. *E. virilis*, Lindl. l. c.; Kränzl. in Mitth. Deutsch. Schutzgeb. ii. (1889) 156 (by error as *viridis*).

Upper Guinea. Sierra Leone: Ninia, *Scott-Elliot*, 4812! Bumban to Port Lokko, *Scott-Elliot*, 5741! Kikoukou Island, River Scarcies, *Hart!* and without precise locality, *Don! Afzelius!* Lagos, *Millen*, 187! Niger Delta: Brass River, *Barter*, 2040! Nun River, "on Phœnix spinosa," *Barter*, 20121! Cameroons: Ambas Bay, *Mann*, 782!

Lower Guinea. Gaboon: Corisco Bay, *Mann*, 1882!

I cannot find a single character by which to separate Lindley's *E. longicollis* and *E. virilis* from the present one.

14. **E. Elliotii,** *Rolfe*. Rhizome and leaf not seen. Scape 1½ ft. high, with a few loose sheaths below, loosely paniculate above. Bracts ovate-lanceolate, acute, 1 lin. long. Pedicels 3–5 lin. long. Sepals narrowly oblong-lanceolate, subacute, 3 lin. long. Petals similar, but a little broader and more membranous. Lip trilobed, 3 lin. long; side lobes narrow, oblong, obtuse, slightly crenulate towards their apices; front lobe broadly rounded, obtuse, somewhat undulate; disc with five slender keels, becoming lamellate and crenulate in front. Column clavate, 1½ lin. long.

Upper Guinea. Sierra Leone: on a grassy hillside about 600 ft. above Falaba, among schistose rocks, *Scott-Elliot*, 5116!

15. **E. Smithii,** *Rolfe*. Scape tall and branched; branches 9 in. long, slender, lax-flowered. Bracts linear-lanceolate, acute, 1–2 lin. long. Pedicels 9 lin. long. Sepals linear-oblong, acute, 6 lin. long. Petals similar, but a little broader and apiculate. Lip trilobed, 5 lin. long; side lobes narrow, with short oblong obtuse apex; front lobe oblong, emarginate, crisped-undulate, with three tuberculate keels; spur clavate-oblong, slightly curved, 1½–2 lin. long. Column clavate, 2 lin. long.

Lower Guinea. Congo, *Smith*, 45!

Only known from a specimen at the British Museum.

16. **E. callichroma,** *Reichb. f. Otia Bot. Hamb.* ii. 116. Rhizome stout. Leaves several, elongate-linear, subacute, ½–1 ft. long, 3–5 lin.

broad. Scapes erect, 1½–2 ft. long, often loosely paniculate above. Flowers lax, yellow, except the crests and margin of the lip, which are white. Bracts linear-lanceolate, subacute, 2–4 lin. long. Pedicels 6–8 lin. long. Sepals oblong-linear, obtuse, 5–6 lin. long. Petals oblong-linear, obtuse, 4–5 lin. long. Lip equalling the sepals, narrowly elliptical-oblong, obtuse, nearly entire, apical half undulate; disc with five thickened nerves or keels, which are somewhat undulate or verrucose above; spur oblong, obtuse, 1 lin. long. Column oblong, 2 lin. long.—N. E. Br. in Gard. Chron. 1889, vi. 298; Kew Bulletin, 1890, App. ii. 45.

Mozamb. Dist. British Central Africa: Manganja Hills, *Meller*, 6 ! 3000 ft. *Kirk*, 6 ! Zomba mountain, *Meller !*

17. **E. aloifolia,** *Welw. ex Reichb. f. in Flora*, 1867, 104. Pseudobulbs oblong-elliptical or elongate-elliptical, clothed with the persistent leaf-sheaths. Leaves ligulate, acute, limb very cartilaginous or rigidly coriaceous, retuse, crenulate or denticulate, 5-nerved, glaucous, 1–2 ft. long, ¾–1 in. broad. Scape 4–5 ft. high, with distant sheaths below, paniculately branched above, many-flowered. Bracts triangular, acute, shorter than the ovary. Flowers as large as those of *E. tristis*, Spreng., greenish-purple. Sepals ligulate, acute. Petals ligulate-oblong, acute. Lip cuneate-oblong; apex trifid; side lobes rectangular; front lobe roundish-oblong, fleshy, apiculate, crisped-lobulate; disc 5-nerved; nerves crenulate, the central one large; spur cylindrical, obtuse, a fifth as long as the lip. Column clavate; anther bicornute.

Lower Guinea. Angola: Pungo Adongo, near Cundumba, among shrubs on rocky slopes by the side of the river Cuanza, rare, *Welwitsch*, 682! (857 ex *Reichenbach*).

18. **E. Petersii,** *Reichb. f. in Flora*, 1865, 186 (*in note*). Rhizome creeping, ¼–⅓ in. thick, bearing scarious imbricate scales. Stems pseudobulbous, 3 in. long, with sheathing acuminate scales below, 3–4-leaved above. Leaves falcate, rigidly coriaceous, narrowed above and acute, 12–16 in. long, 7–10 lin. broad, keeled behind; margin scabrid. Scapes 3–5 ft. high, with several sheaths at the base, loosely paniculate above, or rarely simple. Bracts lanceolate or ovate-lanceolate, acute or acuminate, 3–8 lin. long. Pedicels ½–1 in. long. Sepals oblong-lanceolate, subacute or apiculate, 9–12 lin. long. Petals oblong, obtuse, a little shorter and broader than the sepals. Lip 7–10 lin. long, obscurely trilobed; side lobes broadly elliptical-oblong, obtuse, erect; front one broadly elliptical-oblong, or nearly quadrate, undulate; disc with three crenulate keels below, which are elevated into erect undulate lamellæ on the front lobe; spur clavate-oblong, incurved, 2½–3 lin. long. Column clavate, 3½–5 lin. long; apex broadly margined; base produced into a short foot. Capsule subcylindrical, 1½ in. long.—Reichb. f. Otia Bot. Hamb. ii. 74. *Galeandra Petersii*, Reichb. f. in Linnæa, xx. 679; Peters, Reise Mossamb. 514. *Eulophia schimperiana*, A. Rich. Tent. Fl. Abyss. ii. 283; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 89. *Epidendrum schimperianum*, Hochst. ex A. Rich. l. c. *Eulophia longepedunculata*, Rendle in Journ. Linn. Soc. xxx. 382; Journ. Bot. 1895, 165.

Nile Land. Eritrea: Mt. Alamkale, near Aidereso, 5900 ft., *Schweinfurth*, 1469! Near Acrur, 7100 ft., *Schweinfurth*, 1353 ! 1829. Abyssinia: without locality,

Quartin Dillon ! Schimper, 1592 ! British East Africa : Majichumvi, near Mombasa, *Scott-Elliot*, 6142 ! Sabaki River, near Malindi, *Kirk !* Ukamba ; Kitui, *Hildebrandt*, 2647 (ex *Reichenbach*).

Mozamb. Dist. Without locality, *Peters*. Zanzibar, *Kirk*, 27 ! *Hildebrandt*, 1043 ! German East Africa : between the coast and Uyui, *Taylor !*

Also found in Arabia.

I cannot find any character by which to distinguish *E. longepedunculata*, Rendle.

19. **E. Phillipsiæ,** *Rolfe*. Pseudobulbs ovoid-oblong, 1–2 in. long, about 12-channelled, 2-leaved at the apex. Leaves very fleshy and rigid, lanceolate-linear, acute, canaliculate, somewhat curved, with minutely denticulate margins, 5–10 in. long, 5–7 lin. broad. Panicle $1\frac{1}{2}$–$2\frac{1}{2}$ ft. high, lax, many-flowered. Bracts ovate or ovate-lanceolate, acute or acuminate, 2–5 lin. long. Pedicels 8–12 lin. long. Sepals lanceolate or oblong-lanceolate, acute 9–12 lin. long, spreading, recurved at the apex, brown. Petals oblong-linear, acute, 8–10 lin. long, erect or slightly incurved, light green. Lip 9–10 lin. long, somewhat trilobed, light green with numerous, narrow, light brown, radiating lines ; side lobes narrow with somewhat rounded apex ; front lobe oblong, subacute, $2\frac{1}{2}$–3 lin. broad ; disc with three fleshy keels, and the lateral nerves slightly thickened ; spur subclavate-oblong, curved, 2–$2\frac{1}{2}$ lin. long. Column clavate, 5 lin. long ; anther bidentate.

Nile Land. Somaliland : Woob, Golis range, *Mrs. Phillips ! Miss Cole !*

Also flowered in the collection of G. Lort Phillips, Esq., in June 1897.

20. **E. Coleæ,** *Rolfe*. Pseudobulbs ovoid-oblong, $1\frac{1}{2}$–4 in. long, about 10-channelled, 2-leaved at the apex. Leaves very fleshy and rigid, oblong-lanceolate, acute, canaliculate, strongly recurved, with strongly denticulate margins, 3–6 in. long, 8–12 lin. broad. Panicle 1–2 ft. high, with few branches, lax, many-flowered. Bracts ovate or ovate-lanceolate, acute or subacute, 2–5 lin. long. Pedicels 8–12 lin. long. Sepals subspathulate-lanceolate, acute, 9–12 lin. long, spreading, recurved at the apex, purple-brown or sometimes green along the centre. Petals erect, oblong, subacute, recurved at the apex, 8–9 lin. long, light green veined with purple. Lip 8–9 lin. long, trilobed, white in front, light green behind, somewhat veined with light purple ; side lobes narrowly oblong, rounded at the apex ; front lobe broadly quadrate-oblong, retuse or emarginate, undulate, 5 lin. broad ; disc with three dwarf, fleshy keels, slightly crenulate and bearing a few small teeth in front ; spur subclavate-oblong, slightly curved, 3–$3\frac{1}{2}$ lin. long. Column clavate, 6 lin. long ; anther bidentate.

Nile Land. Somaliland : Woob, Golis range, *Mrs. Lort Phillips ! Miss Cole !*

Also flowered in the collection of G. Lort Phillips, Esq., in June 1897.

21. **E. baginsensis,** *Reichb. f. Otia Bot. Hamb.* i. 66. Rhizome very stout. Pseudobulbs narrowly conical. Leaves ensiform, acute, rigid, 1–2 ft. or more long, conduplicate-complicate, when expanded 2 in. or more broad ; margin crenulate. Scape 3 ft. high, stout, paniculate above ; branches many-flowered. Bracts ovate-lanceolate,

acute, 2–4 lin. long. Sepals ligulate, acute. Petals spathulate, acute. Lip oblong, subtrilobed; side lobes semi-oblong; front lobe very short, subrhomboid, obtusely angled, with two semi-oblong crenulate keels at the base, and three to five or many teeth at the base of the front lobe; spur cylindrical, clavate, much shorter than the ovary. Column trigonous; anther bicornute. Capsule elliptical-oblong or pyriform, 2 in. long.

Nile Land. Niamniam: at the foot of Mount Baginse, on gneiss, *Schweinfurth*, ser. ii. 24!

I have only seen imperfect fruiting specimens of this species.

22. **E. longisepala,** *Rendle in Trans. Linn. Soc. ser.* 2, iv. 43. Scape slender, 1½ ft. high; raceme loosely few-flowered. Bracts ovate, acute, 2–2½ lin. long. Pedicels 5–7 lin. long. Sepals linear-lanceolate, acute, 10–11 lin. long, with a long, narrow, attenuate base. Petals oblong-lanceolate, apiculate, 6 lin. long, 1¾ lin. broad. Lip trilobed; side lobes rounded, entire; front lobe transversely oblong, emarginate, with a slightly undulate margin; disc with 3–5, verrucose or tuberculate lamellæ; spur oblong, short, robust, curved, 2 lin. long. Column clavate, 4 lin. long, winged above.

Mozamb. Dist. British Central Africa: Mlanje, *Whyte!*

23. **E. Nyasæ,** *Rendle in Trans. Linn. Soc., ser.* 2, iv. 44. Scape 1½–2 ft. high; raceme 9–10 in. long, many-flowered. Bracts lanceolate, acuminate, 2½–4 lin. long. Pedicels 5–6 lin. long. Sepals linear-lanceolate, acute, 8–9 lin. long, 1¼ lin. broad. Petals oblong-lanceolate, acute, 6 lin. long, a little broader than the petals. Lip trilobed, 5 lin. long; side lobes narrowly oblong, rounded at the apex; front lobe broadly ovate-oblong, apiculate, 2 lin. long; disc densely verrucose-papillose in front, smooth behind; spur clavate, somewhat conical at the base, 3 lin. long, slightly inflated at the apex.

Mozamb. Dist. British Central Africa: Mlanje, *Whyte!*

Near the S. African *E. lamellata*, Lindl. in general character.

24. **E. euglossa,** *Reichb. f. ex Batem. in Bot. Mag. t.* 5561. Pseudobulbs elongate, swollen at the base, attenuate above, 8 in. or more high. Leaves lanceolate, acute, attenuate at the base, ¾–1 ft. long. Scapes about 4 ft. high (fide *Welwitsch*), with several sheaths below; racemes 9 in. or more long, many-flowered. Bracts lanceolate, acuminate, 1–1¾ in. long. Pedicels 6 lin. long. Sepals and petals oblong-lanceolate, shortly acuminate, 6–7 lin. long, light green. Lip trilobed, 6 lin. long; side lobes semiovate-oblong, acute; front lobe ovate-oblong, subobtuse, minutely undulate, white with purple streaks at the base; disc with about five smooth keels in front, slightly pubescent at the base; spur clavate, 2½ lin. long. Column clavate, 3 lin. long.—Reichb. f. in Flora, 1867, 103. *Galeandra euglossa*, Reichb. f. in Bot. Zeit. 1852, 935; Walp. Ann. vi. 649.

Upper Guinea. Sierra Leone, *Loddiges*, cultivated specimens! *Stormont!* Sugar-

loaf Mountain, *Barter!* Niger Delta: Old Calabar River, *Mann*, cultivated specimens!

Lower Guinea. Angola: Golungo Alto, near the river at Banca de Quilombo, 2000 ft. in deep shade, *Welwitsch*, 671!

"Pseudobulbs not unlike a fossil *Calamites* in shape and appearance," *Welwitsch!*

25. **E. Kirkii,** *Rolfe.* Rhizome thickened. Leaves petiolate, lanceolate or oblong-lanceolate, acuminate, 6–12 in. long, 1–1½ in. broad. Scapes 1¼–1½ ft. high, with about 3 acuminate sheaths below; racemes 6–8 in. long, many-flowered. Bracts linear-lanceolate, acuminate, 6–10 lin. long, white, membranous. Pedicels 5–7 lin. long. Sepals oblong-linear, subacute, 9 lin. long. Petals ovate-oblong, acute, membranous, 7 lin. long. Lip trilobed, 7 lin. long; side lobes broadly oblong, rounded at the apex; front lobe suborbicular, undulate; disc with 2 oblong obtuse calli near the base, and five strongly verrucose-crenulate keels on the front lobe; spur conical, oblong, 2 lin. long. Column clavate, 3 lin. long; foot half as long as the column.

Mozamb. Dist. British Central Africa: Manganja Hills, *Waller!* Shire Highlands, *Buchanan*, 315! Portugese East Africa: Morambala Mountains, 1500–3500 ft., *Kirk!*

26. **E. stachyodes,** *Reichb. f. Otia Bot. Hamb.* i. 66. Leaves lanceolate, acuminate, 5–10 in. long, ¾–1¾ in. broad. Scapes 2 ft. high, with several oblong-lanceolate, acute sheaths; racemes 6 in. long, many-flowered. Bracts lanceolate or linear-lanceolate, acuminate, 7–9 lin. long. Pedicels 6–7 lin. long. Sepals oblong-lanceolate, acute, 9–10 lin. long, green suffused with purple; lateral sepals adnate to the foot of the column. Petals elliptical-oblong, subobtuse, 8–9 lin. long, more membranous than the sepals, white. Lip white, with purple crests and nerves on the side lobes, trilobed, 6–7 lin. long; side lobes roundish-oblong, undulate; front lobe broadly elliptical-oblong, obtuse; disc with a pair of small calli below the middle, verrucose all over the front part; spur oblong, somewhat curved, broader at the base, 1½ lin. long. Column clavate, 3 lin. long.

Mile Land. British East Africa: Niamniam Land, near the Yubbo River, *Schweinfurth*, 3754! North of Monbuttu, *Schweinfurth*, 3554!

27. **E. crinita,** *Rolfe.* Leaves linear, acute, 4–10 in. long, 2–3 lin. broad. Scapes slender, 1½ ft. high, covered with long imbricate sheaths; racemes 4 in. long, lax, few-flowered. Bracts linear-lanceolate, acuminate, 4–6 in. long. Pedicels 4–5 lin. long. Sepals linear-lanceolate, acute 6–7 lin. long, light green. Petals elliptical-oblong, acute, 5–6 lin. long, lilac. Lip trilobed, 5–6 lin. long, white, with light purple veins and margin, and light yellow hairs; side lobes narrowly oblong, obtuse; front lobe broadly obovate, obtuse; disc with four keels at the base, densely barbate above; spur linear oblong, obtuse, curved, 1 lin. Column clavate, 3 lin. long.

Mozamb. Dist. (?) Described from a cultivated specimen believed to have been sent from the Shire Highlands by Mr. J. Buchanan, C.M.G.

Allied to the South African *E. tristis*, Spreng., and the Indian *E. graminea*, Lindl.

28. **E. venulosa,** *Reichb. f. Otia Bot. Hamb.* ii. 116. Rhizome thickened; stem slender. Leaves linear, acute, developed at flowering time, 3–5 lin. long, 1 lin. broad. Scapes slender, 1 ft. high; racemes few-flowered. Bracts lanceolate, acuminate, 3–4 lin. long. Pedicels 3–5 lin. long. Flowers white. Sepals lanceolate, acute or acuminate, 5–9 lin. long, 1–1¼ lin. broad. Petals lanceolate or falcate-oblong, acute or subobtuse, a little shorter and broader than the sepals. Lip pandurately trilobed, 6 lin. long; side lobes rounded-oblong, obtuse; front lobe ovate-elliptical or oblong-lanceolate, acute, crenulate or undulate; disc with 3 keels, barbate on the front lobe; spur oblong, curved, conical at the base, 2–2½ lin. long. Column clavate, 2–3 lin. long.—*E. humilis*, Rendle in Journ. Bot. 1895, 165.

Mozamb. Dist. British Central Africa: Manganja Hills, 1000 ft., *Meller!* Shire Highlands, Ndurandi, 3000–4000 ft., *Scott-Elliot*, 8484!

29. **E. adenoglossa,** *Reichb. f. Otia Bot. Hamb.* i. 66 (*in note*). Rhizome stout. Leaves undeveloped at flowering time. Scape 1 ft. high, with about two tubular sheaths near the base; raceme few-flowered. Bracts lanceolate, acute, 6–8 lin. long. Sepals lanceolate, acute, 5–6 lin. long. Petals similar to the sepals but a little smaller. Lip trilobed, 4–5 lin. long; side lobes narrowly oblong, obtuse; front lobe elliptical-ovate, acute; disc with three rather obscure, slightly crenulate keels; spur saccate-oblong, obtuse, ¾ lin. long. Column clavate, 3 lin. long.—*Cymbidium adenoglossum*, Lindl. in Journ. Linn. Soc. vi. 134.

Upper Guinea. Niger Territory: Nupe, *Barter!*

30. **E. Antunesii,** *Rolfe in Bolet. Soc. Brot.* vii. 236. Scape 8–9 in. high; raceme 10–20-flowered. Bracts linear-lanceolate, acuminate, 6–9 lin. long. Sepals lanceolate, acute, 7–9 lin. long. Petals oblong, apiculate, shorter and broader than the sepals. Lip trilobed, as long as the petals; side lobes rounded, 8–9-nerved; front one broadly oblong, subobtuse, 5-nerved; nerves fimbriate; disc tri-carinate below; spur oblong, obtuse, scarcely 1 lin. long.

Lower Guinea. Angola: Huilla, *Antunes*, 23!

31. **E. tanganyikensis,** *Rolfe.* Scape 1¼–1½ ft. high, with three or four short sheaths; raceme 3–4 in. long, lax, about 4–8-flowered. Bracts linear-lanceolate, acuminate, 4–5 lin. long. Pedicels 8–11 lin. long. Sepals linear-oblong, subacute, 6–8 lin. long, the lateral ones adnate to the foot of the column. Petals oblong, obtuse, 5–7 lin. long. Lip trilobed, 6–8 lin. long; side lobes roundish-oblong, obtuse; front lobe obovate or nearly quadrate, emarginate; disc with two lamellæ near the base, and five to seven rows of tubercles on the nerves in front; spur oblong, obtuse, slightly curved, 2–2½ lin. long. Column clavate, 3 lin. long.

Mozamb. Dist. British Central Africa: Fwambo, south of Lake Tanganyika, 5200 ft., *Nutt!*

32. **E. monticola,** *Rolfe.* Scape stout, with acute sheaths, base not seen; raceme 3–5 in. long, many-flowered. Bracts lanceolate, acuminate, ½–1 in. long. Pedicels 7–9 in. long. Petals ovate-oblong, obtuse or apiculate, 6–7 lin. long. Lip trilobed, 6–8 lin. long; side lobes broadly ovate-oblong, obtuse; front lobe triangular-oblong, subobtuse, slightly undulate; disc with 5–7 thickened, crenulate keels, the three central ones increasing into lamellæ towards the apex of the front lobe of the lip. Column clavate, stout, 3½ lin. long.

Mozamb. Dist. British Central Africa: Mlanje, 6000 ft., *McClounie,* 50!

33. **E. lanceolata,** *Rolfe.* Scape 1–1¼ ft. high, with about three long sheaths; raceme short, 6–8-flowered. Bracts lanceolate, acute, ½–1 in. long. Pedicel 5 lin. long. Sepals and petals lanceolate or oblong-lanceolate, acute, 9–10 lin. long; lateral sepals adnate to the foot of the column. Lip trilobed, 9–10 lin. long; side lobes narrowly oblong, with rounded apex; front lobe ovate, suborbicular, apiculate, crenulate; disc with two slender keels on the lower half, slightly verrucose above; spur conical-oblong, obtuse, 2 lin. long, placed almost at right angles to the lip. Column clavate, 6 lin. long; foot half as long as the column.

Mozamb. Dist. British Central Africa: Fwambo, S. of Lake Tanganyika, *Carson,* 34!

34. **E. aristata,** *Rendle in Journ. Bot.* 1895, 169. Scape moderately stout, 1¼ ft. or more long; raceme lax, few-flowered, 2–3 in. long. Bracts lanceolate, acuminate, 8–12 lin. long. Lateral sepals oblong-lanceolate, acute, 9–10 lin. long, 2½ lin. broad; dorsal one rather shorter. Petals linear-oblong, 7–8 lin. long, rather narrower than the sepals. Lip trifid, 8–9 lin. long; side lobes rather narrow, with small, roundish, or obtuse apex; front lobe broadly elliptical, obtuse, 3 lin. broad; disc with about five obscure keels, on which are a few papillæ; spur oblong, obtuse, 1½ lin. long. Column clavate, 5 lin. long, produced at the base into a foot 1½ lin. long.

Mozamb. Dist. British Central Africa: Shire Highlands, *Scott-Elliot,* 8616, in part!

35. **E. præstans,** *Rendle in Journ. Bot.* 1895, 166. Scape 1½ ft. or more high, with a few lanceolate sheaths; raceme short, several-flowered. Bracts lanceolate or linear-lanceolate, acuminate, ½–1 in. long. Pedicels 8–9 lin. long. Sepals oblong-lanceolate, acuminate, 1½–1¾ in. long, 8–9 lin. broad. Petals oblong-lanceolate, acuminate, slightly smaller than the sepals. Lip trilobed, 12–14 lin. long; side lobes broadly oblong, obtuse; front lobe broadly elliptical, obtuse; disc with two keels at the base, sparsely barbate in the middle, with long hairs; spur oblong, 1½ lin. long. Column clavate, 3–3½ lin. long; foot half as long as the column.

Mozamb. Dist. British Central Africa: Shire Highlands, *Scott-Elliot,* 8616, in part!

36. **E. Holubii,** *Rolfe.* Scapes 1 ft. or more high, with several sheaths; racemes 3–5-flowered. Bracts lanceolate, acuminate, ½–1 in.

long. Pedicels 5–6 lin. long. Sepals and petals oblong-lanceolate, acute, 7–8 lin. long. Lip 7–8 lin. long, trilobed; side lobes broadly semiovate, obtuse; front lobe suborbicular or broadly obovate; disc with nerves scarcely thicker at the base, barbate in front with long hairs; spur linear, subconical, obtuse, 2–2½ lin. long. Column clavate, 3 lin. long.

Mozamb. Dist. Northern Bechuanaland: Leshumo Valley, *Holub !* Near the Zambesi River, N.W. of Shesheke, *Holub !*

Lower Guinea. German South-West Africa: Amboland; Oshike, *Schinz !*

37. **E. hereroensis,** *Schlechter in Bull. Herb. Boiss.* iv. 417. Stem erect, glabrous, 16–20 in. high. Leaves few, fascicled, suberect, produced after flowering, linear, acute, rather rigid, nerved. Scapes lateral, rather strong, laxly sheathed; sheaths few, submembranous, short, appressed to the scape; spike loosely many-flowered. Bracts membranous, suberect, minute, lanceolate, acute, much shorter than the ovary. Flowers erect, spreading. Sepals narrowly oblong, subacute, 8–9 lin. long; lateral 2½ lin. broad; dorsal a little narrower than the lateral. Petals oblique, lanceolate-oblong, subacute, 6–7 lin. long, 2½ lin. broad. Lip as long as the sepals, lanceolate, slightly trilobed above; side lobes very short, subtriangular, acute; front lobe much larger than the side ones, ovate-oblong, obtuse, with inflexed margin; disc with two parallel keels and some thickened nerves; spur thick, obtuse, subincurved, 2½ lin. long, mouth very broad. Column about half as long as the lip; stipes oblong-ligulate, short; glands elliptical, semilunate, with a very acute apex.

Lower Guinea. German South-West Africa: Hereroland; near Harris, among shrubs, *Fleck,* 412.

Only known to me from the original description.

38. **E. Welwitschii,** *Rolfe in Bolet. Soc. Brot.* vii. 236. Plant 1–1¼ ft. high. Leaves linear or linear-lanceolate, acute, 6–8 in. long, immature at flowering time. Scapes 1–1¼ ft. long, with a few lanceolate sheaths; racemes 2–3 in. long, about 7–9-flowered. Bracts lanceolate or ovate-lanceolate, acute, 4–9 lin. long. Pedicels 5–6 lin. long. Sepals and petals oblanceolate, acute or subacuminate, 10–12 lin. long. Lip subentire, elliptical-oblong, obtuse, 10–11 lin. long; disc with three obtuse keels at the base; nerves more or less villose above; spur oblong, obtuse, 2 lin. long. Column stout, 2½ lin. long.—*Orthochilus Welwitschii,* Reichb. f. in Flora, 1865, 186.

Lower Guinea. Angola: Huilla; at Monino, in sandy places among Proteaceæ, *Welwitsch,* 720! Huilla, *Antunes,* 22!

39. **E. renschiana,** *Durand & Schinz, Conspect. Fl. Afr.* v. 25. Leaves rigid, linear-lanceolate, acuminate. Scape tall; raceme lax. Sepals and petals not described. Lip broadly oblong, obtuse or emarginate, with a pair of obtuse-angled lobes near the base; disc with a pair of keels at the base, barbate with crinite, very slenderly filiform,

often curved hairs; spur slender, cylindrical, acute, very short, retrorse. *Orthochilus renschianus*, Reichb. f. in Flora, 1882, 532.

Lower Guinea. Angola: Malange, *Mechow*, 299.

Only known to me from the original description.

40. **E. macrantha,** *Rolfe.* Sepals ovate-oblong, apiculate, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long, dorsal one a little broader than the lateral. Petals similar to the sepals but a little smaller. Lip trilobed, 12–14 lin. long; side lobes roundish-oblong; front lobe oblong, obtuse, much longer than the side lobes; disc with about 4 rows of tall, dentate or denticulate lamellæ; spur narrowly cylindrical, 3 lin. long. Column broadly clavate, 6–7 lin. long.

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan!*

Remarkable for its large broad flowers and the prominent lamellæ of the lip. The sepals and petals appear to have been white or light yellow, and the lip darker, with very dark purple keels.

41. **E. dichroma,** *Rolfe.* Leaves broadly lanceolate, acuminate, 7-nerved, $1\frac{1}{2}$ ft. long, $2\frac{1}{4}$ in. broad. Scape $2\frac{1}{2}$ ft. high, with a few long sheaths; raceme 6 in. long, many-flowered. Bracts linear-lanceolate, $\frac{3}{4}$–$2\frac{1}{4}$ in. long. Pedicels 6–8 lin. long. Flowers yellow, with the side lobes of the lip deep purple. Sepals and petals elliptical-oblong, acute, 11–13 lin. long. Lip trilobed, 9–10 lin. long; side lobes suborbicular-oblong, deep purple; front lobe suborbicular-elliptical, obtuse; disc with 2 keels behind, passing into several thickened, somewhat fimbriate nerves at the base of the front lobe; spur conical at the base, narrow above, 2 lin. long. Column clavate, $2\frac{1}{2}$ lin. long.—*E. bicolor*, Reichb. f. & Sond. in Flora, 1865, 186, in part. *E. Welwitschii*, Hook. f. Bot. Mag. sub t. 7330 (not Rolfe).

Lower Guinea. Angola: Huilla; Varzea do Ferrao da Sola, in places inundated during the wet season, *Welwitsch*, 718!

Reichenbach confused this with a quite distinct S.E. African species (since described as *E. Zeyheri*, Hook. f. Bot. Mag. t. 7330) under the name of *E. bicolor*, Reichb. f. and Sond. Sir Joseph Hooker renamed it *E. Welwitschii*, but that name being preoccupied, the above is substituted.

42. **E. abyssinica,** *Reichb. f. in Linnæa*, xxii. 866. Leaves lanceolate or oblanceolate, acute or subobtuse, 6–12 in. long, 1–2 in. broad, attenuate at the base into a sheathing petiole. Scape $1\frac{1}{2}$–$1\frac{3}{4}$ ft. high, with a few long sheaths; raceme 4–6 in. long, many-flowered. Bracts lanceolate, acuminate, 7–9 lin. long. Sepals broadly ovate, acute, 8 lin. long. Petals elliptical-ovate, acute, 7 lin. long. Lip trilobed, 7 lin. long; side lobes very broadly oblong, obtuse; front lobe suborbicular, obtuse; disc with 2 keels, becoming more elevated in front, where they suddenly terminate; spur oblong, obtuse, $1\frac{1}{2}$ lin. long.—Walp. Ann. iii. 551; Engl. Hochgeb. Fl. Trop. Afr. 187. *Orthochilus abyssinicus*, Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 284, t. 82.

Nile Land. Abyssinia: near Addi Schum Eschet, in swampy meadows, *Schimper*, 1700! Shire district, on mountains, *Quartin-Dillon!* Sana; near Bahara, in swamps, *Schimper*, 1636!

43. **E. milanjiana,** *Rendle in Trans. Linn. Soc. ser.* 2, iv. 44. Rhizome stout. Leaves lanceolate, acuminate, 1–1½ ft. long, 1–1½ in. broad; base attenuate. Scapes 1–1¾ ft. long, with a few long sheaths below; racemes subcorymbose, dense. Bracts linear-lanceolate, acuminate, ¾–1¼ in. long. Pedicels 5–7 lin. long. Flowers yellow, with purple-blue side lobes to the lip. Sepals elliptical-oblong, acute, 14–16 lin. long, 5–6 lin. broad. Petals oblong, 12–13 lin. long, 4–5 lin. broad. Lip trilobed, 11–12 lin. long; side lobes roundish-oblong; front lobe obovate-suborbicular, obtuse; disc with 2 keels at the base, in front of which the nerves are somewhat fimbriate; spur conical, slender, 2½ lin. long. Column clavate, 2½ lin. long.

Mozamb. Dist. British Central Africa: Lower Mlanje, 2500 ft. *Whyte*, 257! Manganja Hills, at Cananda, *Meller!* Nyasaland, *Buchanan*, 349! 1328! German East Africa: Uganda, *Wilson*, 114! Portuguese East Africa: Morambala mountains, 3000 ft., *Kirk!*

44. **E. Mechowii,** *Durand & Schinz, Conspect. Fl. Afr.* v. 23. Leaves linear-lanceolate, acuminate. Scape a little longer than the leaves; raceme densely capitate. Sepals and petals not described. Lip cuneate, trifid; side lobes retrorse, obtuse-angled; front lobe with a narrow isthmus, dilated, obtuse-angled, denticulate and subemarginate at the apex, velvety near the base; disc with a pair of keels, which become fimbriate upwards, and bear some linear or filiform appendages in front.—*Orthochilus Mechowii*, Reichb. f. in Flora, 1882, 532.

Lower Guinea. Angola: Malange, Mechow, 300.

Only known to me from the original description.

45. **E. Nuttii,** *Rolfe.* Scape 1–1¼ in. long, rather slender, covered with long imbricate sheaths; raceme subcorymbose. Bracts linear-lanceolate, acuminate, 5–10 lin. long. Pedicels 6–7 lin. long. Lateral sepals broadly oblong-lanceolate, acuminate, 8–9 lin. long, dorsal one much narrower, attenuate below. Petals lanceolate, acuminate, 5–6 lin. long. Lip trilobed, 6–7 lin. long, narrowed at the base; side lobes oblong, with rounded apex; front lobe lanceolate, subobtuse; disc with a pair of acute keels, terminating in a tuft of fringes at the base of the front lobe; spur narrowly oblong, 1½–1¾ lin. long. Column clavate, 2 lin. long.

Mozamb. Dist. British Central Africa: Fwambo, south of Lake Tanganyika, 5250 ft., *Nutt!*

46. **E. speciosa,** *Rolfe.* Scape 1¼ ft. high, with about 3 basal sheaths; raceme obtuse, 5–6-flowered. Bracts lanceolate, acuminate, 5–6 lin. long. Pedicels 4–5 lin. long. Flowers mauve and white. Sepals ovate-oblong, acute or apiculate, 11 lin. long. Petals elliptical-oblong, acute or apiculate, 10 lin. long. Lip 9 lin. long, trilobed; side lobes broadly rounded; front lobe broadly suborbicular; disc with 2 thickened, slightly pubescent keels at the base, very slightly barbate in the centre; spur oblong, 1¼ lin. long. Column clavate, 2 lin. long; foot short.

Mozamb. Dist. British Central Africa: between Lakes Tanganyika and Nyasa, *Johnston!*

47. **E. Carsoni,** *Rolfe.* Rhizome articulate, with swollen joints. Leaves linear, acute, 5–6 in. long (immature). Scape 10 in. high, with 2–3 sheaths near the base; raceme 2 in. long, 8–10-flowered. Bracts lanceolate, acuminate, 4–6 lin. long. Pedicels 4–6 lin. long. Sepals oblong-lanceolate, acute, 5–6 lin. long. Petals lanceolate-oblong, acute, 5–6 lin. long, rather broader than the sepals. Lip subtrilobed, 5–6 lin. long; side lobes very obtuse; front lobe very broadly oblong, obtuse; disc 3-nerved at the base, barbate on the nerves above; spur clavate, $1\frac{1}{2}$ lin. long. Column clavate, 2 lin. long.

Mozamb. Dist. British Central Africa: Tanganyika Plateau, Fwambo, *Carson!*

48. **E. subulata,** *Rendle in Journ. Bot.* 1895, 167. Scapes 1–$1\frac{1}{4}$ ft. high, with several basal sheaths; racemes 1–$1\frac{1}{2}$ in. long. Bracts linear-subulate, acuminate, 4–7 lin. long. Pedicels 3–4 lin. long. Sepals oblong-lanceolate, acute or acuminate, 8–9 lin. long. Petals oblong-lanceolate, acute, 7–8 lin. long. Lip trilobed, 8–9 lin. long; side lobes broadly oblong, obtuse; front lobe obovate, obtuse; disc with two keels at the base, veins not barbate above; spur slender, $1\frac{1}{2}$ lin. long. Column clavate 2 lin. long; foot half as long as the column.

Nile Land. British East Africa: Uganda; Katonga River, on dry, rather bare alluvium, *Scott-Elliot*, 7417!

49. **E. Missionis,** *Rendle in Journ. Bot.* 1895, 168. Leaves elongate-linear, acute, 1 ft. or more long, 3–4 lin. broad. Scapes $1\frac{1}{2}$ ft. high, with a few rather long sheaths; racemes 3–$3\frac{1}{2}$ in. long, many-flowered. Bracts lanceolate, acuminate, 3–6 lin. long. Pedicels 4–5 lin. long. Sepals ovate-oblong, acute, 6–7 lin. long. Petals oblong, subacute, 5–6 lin. long. Lip 5–6 lin. long, trilobed; side lobes roundish-oblong; front lobe obovate, obtuse or retuse; disc with a pair of keels at the base, strongly papillose-barbate in front; spur oblong, 1 lin. long. Column clavate, 2 lin. long; foot about as long as the column.

Mozamb. Dist. British Central Africa: Nyasaland; foot of Mount Mlanje, 4000 ft., *Scott-Elliot*, 8618!

50. **E. Buchanani,** *Rolfe.* Rhizome stout. Scapes 9–12 in. high, with a few sheaths below; racemes 1–2 in. long, dense. Bracts linear-lanceolate, acuminate, 4–10 lin. long. Pedicels 6–8 lin. long. Sepals and petals lanceolate-oblong, subacute, 5–6 lin. long. Lip pandurately trilobed, 5–6 lin. long; side lobes very short, rounded-obtuse at the apex; front lobe broadly elliptical-oblong, apiculate, crenulate; disc with scarcely, if at all, thickened nerves; spur oblong, $1\frac{1}{2}$ lin. long. Column stout, 2 lin. long.

Mozamb. Dist. British Central Africa: Shire Highlands, common in the wet months, *Buchanan*, 316!

51. **E. Bainesii,** *Rolfe.* Leaves about 5–7, tufted, linear, acute, somewhat curved, 6–10 in. long. Scapes 1 ft. long, clothed with lanceolate, acuminate, imbricate sheaths; racemes short, few-flowered. Bracts lanceolate, acuminate, 5–9 lin. long. Pedicels 4 lin. long. Sepals oblong, lanceolate, acute, carinate, 9–10 lin. long. Petals broadly elliptical-oblong, acute, 8–9 lin. long. Lip trilobed, 8–9 lin. long; side lobes narrowly oblong, with a rounded apex; front lobe ovate-oblong, subobtuse; disc with four crenulate keels on the lower half, the two inner extending half-way along the front lobe, there becoming more slender and barbate; midnerve thickened and barbate in front; spur saccate, obtuse, ½ lin. long. Column stout, 2 lin. long; foot half as long as the column.

Tropical South Africa. Without locality, *Baines !*

52. **E. flavopurpurea,** *Rolfe.* Scape slender, 2¼ ft. high, with a few distant sheaths below; racemes lax, 13 in. long, few-flowered. Bracts lanceolate, scarious, nearly as long as the ovary. Pedicels about ¾ in. long. Sepals lanceolate, acuminate, 9–10 lin. long. Petals oblong-ligulate, subobtuse, 9–10 lin. long, about 4 lin. broad, twice as broad as the sepals, yellowish-green. Lip ligulate, trifid, striped with pale purple; side lobes semioblong, obtuse; front lobe obcordate, crenulate; disc with five teeth; spur conical, retrorse, small, yellow at the apex. Column trigonous.—*Cyrtopera flavopurpurea,* Reichb. f. Otia Bot. Hamb. i. 68.

Nile Land. British East Africa: Niamniam, *Schweinfurth,* 3546!

53. **E. Schweinfurthii,** *Kränzl. in Engl. Jahrb.* xvii. 54. Scape 22 in. high, very slender, with several sheaths; racemes lax, few-flowered. Bracts linear-subulate, very narrow, 4–5 lin. long. Pedicels 4–6 lin. long. Dorsal sepal nearly orbicular, apiculate, 4 lin. long and about as broad; lateral subequal, a little broader than the dorsal. Petals much smaller than the sepals, broadly ligulate, acute, 4 lin. long, 1½ lin. broad. Lip trilobed; side lobes erect, rhomboid, with a rounded apex; front lobe oblong, acute, 5 lin. long; disc with three keels extending from the apex to the base of the lip. Keels elevated and tuberculate in front; spur stout, straight, extinguisher-shaped. Column 3 lin. long, a little dilated above.

Nile Land. British East Africa: Bongoland; near Tondy River, *Schweinfurth,* 2671.

Only known to me from the original description.

54. **E. holstiana,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 157. Plant slender, 2½–3½ ft. high. Leaves 2–3, very narrowly linear, acuminate. Scape with a few basal sheaths; racemes 2½–3 in. long, many-flowered. Bracts lanceolate or ovate-lanceolate, acute, shorter than the ovary. Flowers deep yellow, 6–7 lin. diam. Sepals ovate-oblong, acute, 4 lin. long; dorsal a little narrower than the lateral. Petals oblong, subobtuse, 3½ lin. long, slightly denticulate. Lip trilobed; side lobes

small, ovate-triangular, subobtuse; front lobe obovate, retuse, crenulate; disc strongly barbate in front, with 2 prominent lamellæ below the middle; spur broadly conical, obtuse, $\frac{1}{3}$ lin. long. Column clavate, incurved, $1\frac{1}{2}$ lin. long; foot as long as the column.—Kränzl. in Engl. Jahrb. xxii. 23.

Mozamb. Dist. German East Africa: Usambara; Simbili, on the eastern slope of the Kombola-Kiranga Range, *Holst*, 2363!

55. **E. Shupangæ,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 157. Rhizome tuberous. Leaves long petiolate, elongate-lanceolate or linear-lanceolate, acute, 1–$1\frac{1}{2}$ ft. long, $\frac{1}{4}$–$1\frac{1}{2}$ in. broad. Scapes 2–5 ft. high, covered with long, imbricate sheaths; racemes 3–6 in. long, many-flowered. Bracts lanceolate or linear-lanceolate, acuminate, $\frac{1}{2}$–$1\frac{1}{2}$ in. long. Pedicels 6–9 lin. long. Flowers yellow, with orange-coloured hairs on the disc of the lip. Sepals and petals oblong or lanceolate-oblong, acute, 6–9 lin. long. Lip 5–7 lin. long, trilobed; side lobes triangular-oblong, subobtuse; front lobe broadly oblong or obovate-oblong, obtuse or emarginate; disc with 2 basal keels behind, densely barbate in front; spur oblong, $\frac{1}{2}$–1 lin. long. Column clavate, 3 lin. long.—*Cyrtopera Shupangæ*, Reichb. f. Otia Bot. Hamb. ii. 116.

Mozamb. Dist. German East Africa: Kilimanjaro, Marangu, 4000 ft., *Volkens*, 2117. Portuguese East Africa: Shupanga, *Kirk!* Banks of the Zambesi, near Mazara, *Meller!* Zambesi delta, among grass, *Kirk!* British Central Africa: near Sochi Hill, 3000 ft., *Kirk!* Manganja Hills, *Waller!* Magomoro Mission Station, 3000 ft., *Kirk!* Shire Highlands; top of Zomba Mountain, in marshy places, *Buchanan*, 309! Blantyre, *L. Scott!*

56. **E. Johnstoni,** *Rolfe.* Leaves elongate-linear, acute, about 9 in. long. Scapes $1\frac{3}{4}$ ft. high; racemes about $2\frac{1}{2}$ in. long, rather dense. Bracts linear-lanceolate, acuminate, 4–6 lin. long. Pedicels 4–5 lin. long. Sepals oblong-lanceolate, acute, 5–6 lin. long. Petals oblong or elliptical-oblong, acute, 5–6 lin. long. Lip trilobed, 5–6 lin. long; side lobes broadly oblong, obtuse; front lobe obovate, obtuse, denticulate; disc with 2 keels at the base, becoming elevated into crenulate lamellæ below the middle; nerves sparingly barbate above with a few long processes; spur very shortly saccate. Column clavate, $1\frac{3}{4}$–2 lin. long; foot as long as the column.

Nile Land. British East Africa: Maungu, 2000 ft., *Johnston!*

57. **E. Thomsoni,** *Rolfe.* Scapes 1 ft. high, rather slender; racemes subcapitate. Bracts lanceolate, acuminate, 5–8 lin. long. Pedicels 5–7 lin. long. Sepals ovate-oblong, acute or apiculate, 7–8 lin. long. Petals elliptical-oblong, acute or apiculate, 6–7 lin. long. Lip 6–7 lin. long, trilobed; side lobes broadly rounded, obtuse; front lobe broadly suborbicular; disc with about 5 hairy keels at the base, pubescent above; spur conical, 1 lin. long. Column clavate, 3 lin. long; foot short.

Mozamb. Dist. British Central Africa: between Lake Nyasa and Lake Tanganyika, 6000–8000 ft., *Thomson!*

58. **E. lata,** *Rolfe.* Leaves narrowly lanceolate, acute, attenuate into the petioles, 10 in. long, 10 lin. broad. Scapes 2–2¼ ft. high, with several long, tubular, imbricate sheaths; racemes 3–4 in. long, dense-flowered. Bracts lanceolate, acuminate, 5–7 lin. long. Pedicels 6–8 lin. long. Sepals ovate, subobtuse, 6–7 lin. long. Petals ovate, subobtuse, 5–6 lin. long. Lip trilobed, 5–6 lin. long; side lobes broadly semiovate, obtuse; front lobe obovate; disc 2-keeled at the base; nerves of the front lobe all densely papillose-barbate; spur broadly conical, ¾ lin. long. Column clavate, 2 lin. long; foot nearly as long as the column.

Mozamb. Dist. British Central Africa: Fwambo, south of Lake Tanganyika, *Carson,* 13!

59. **E. Walleri,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 157. Leaves long petiolate, lanceolate or linear-lanceolate, acute or acuminate, 6–10 in. long, 6–10 lin. broad. Scapes 1½–2½ ft. high, clothed with long imbricate sheaths; racemes 3–6 in. long, many-flowered. Bracts linear, acuminate, 1–1¾ in. long. Pedicels 3–4 lin. long. Sepals linear-lanceolate, acute, 1¼–1¾ in. long. Petals similar to the sepals but a little shorter. Lip trilobed, 7–8 lin. long; side lobes oblong, obtuse; front lobe lanceolate-oblong, obtuse; disc with two slight keels behind, densely papillose-barbate in front; spur obsolete.—*Cyrtopera Walleri,* Reichb. f. Otia Bot. Hamb. ii. 117.

Mozamb. Dist. British Central Africa: Manganja Hills, *Waller!* Shire Highlands, in marshy places, *Buchanan,* 311! South of Lake Victoria Nyanza, *Hanningston!* Northern Bechuanaland, Leshumo Valley, *Holub,* 702!

60. **E. aurantiaca,** *Rolfe.* Leaves linear, acuminate, 6 in. long (immature). Scapes 1–1¼ ft. high, with long sheaths, imbricate below; racemes 3–5 in. long, 8–10-flowered. Bracts linear-lanceolate, acuminate, 5–8 lin. long. Pedicels 5–7 lin. long. Flowers orange. Sepals oblong-lanceolate, acute or subacuminate, 1–1⅓ in. long. Petals oblong, subobtuse or apiculate, ¾–1 in. long. Lip entire, broadly elliptical, emarginate, 8–9 lin. long; disc 2-keeled below, densely barbate with long hairs in the centre; spur gibbous, 1 lin. long. Column clavate, 3 lin. long; foot half as long as the column.

Mozamb. Dist. British Central Africa: between Lake Tanganyika and Lake Nyasa, *Johnston!* Tanganyika Plateau, *Carson!* Fwambo, *Carson,* 104!

61. **E. manganjensis,** *Rolfe.* Leaves petiolate, lanceolate, acute, 6–12 in. long, 1¼–1½ in. broad. Scape 2½ ft. high, stout, clothed with long, imbricate, white sheaths; racemes 6–8 in. long, many-flowered. Bracts lanceolate or linear-lanceolate, acuminate, 5–12 lin. long. Pedicels 5–8 lin. long. Sepals lanceolate-oblong, acute, 7 lin. long. Petals elliptical-oblong, subacute, 6 lin. long. Lip 6 lin. long, trilobed; side lobes oblong, with a rounded apex; front lobe broadly elliptical-oblong, obtuse, undulate; disc 3-keeled below the middle; spur conical-oblong, 1 lin. long. Column clavate, incurved, 3 lin. long; foot half as long as the column.

Mozamb. Dist. British Central Africa: Shire Highlands; near Mt. Sochi, 3000 ft., *Kirk!*

62. **E. Woodfordii,** *Rolfe.* Rhizome tuberous. Leaves lanceolate or elongate-lanceolate, acute or acuminate, 8–18 in. long, $1\frac{1}{2}$–$2\frac{1}{4}$ in. broad, attenuate at the base into a sheathing petiole. Scapes $1\frac{1}{2}$–3 ft. high, with several long sheaths below; racemes 6–15 in. long, many-flowered. Bracts linear-lanceolate or linear, acuminate, $\frac{1}{2}$–1 in. long. Pedicels 6–8 lin. long. Sepals oblong-lanceolate, acute, 7–10 lin. long; lateral adnate to the foot of the column, forming a chin. Petals oblong or elliptical-oblong, subacute or obtuse, 6–8 lin. long. Lip 7–10 lin. long, more or less distinctly trilobed; side lobes broadly oblong, rounded or obtuse at the apex; front lobe broadly ovate-orbicular, obtuse, undulate; disc with four slightly thickened nerves at the base, and a pair of quadrate-oblong, erect lamellæ in the middle; nerves covered with long, barbate processes in front; spur broadly saccate. Column clavate, 4 lin. long; foot half as long as the column.—*Dendrobium longifolium*, H. B. K., Nov. Gen. & Sp. i. 360. *Xylobium longifolium*, Lindl. ex Spreng. Syst. Veg. iii. 733. *Maxillaria longifolia*, Lindl. Gen. & Sp. Orch. 150. *Cyrtopera longifolia*, Reichb. f. in Walp. Ann. vi. 668; Flora, 1865, 189. *Cyrtopodium Woodfordii*, Sims in Bot. Mag. t. 1814; Lindl. Bot. Reg. t. 1508. *Cyrtopera Woodfordii*, Lindl. Gen. & Sp. Orch. 189; Lindl. Orch. Linden. 19; Reichb. f. in Bonplandia, ii. 19; Griseb. Fl. Brit. W. Ind. 630. *Cypripedium epidendricum*, Vell. Fl. Flum. ix. t. 64. *Govenia barbata*, Poepp. & Endl. Nov. Gen. & Sp. ii. 5, t. 107, figs. a–d. *Lissochilus amazonicus*, Rodr. Gen. & Sp. Orch. Nov. i. 89. *Cyrtopera amazonica*, Rodr. l.c. ii. 180. *C. vellosiana*, Rodr. l.c. ii. 179. *Paphiopedilum epidendricum*, Pfitz. in Engl. Jahrb. xix. 42.

Upper Guinea. Gold Coast, *Burton and Cameron!* Lagos, *Millen!*

Lower Guinea. Angola: Golungo Alto, in swamps near the river Casabella, Sobato de Bumba, *Welwitsch*, 664! Golungo Alto, *Welwitsch*, 671!

Common in the West Indies and in Tropical America. It is interesting to find this Tropical American plant in several different localities in Tropical Africa, but there are grounds for suspecting it to have been introduced.

63. **E. flexuosa,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 157. Pseudobulbs approximate, ovate-oblong, obtuse, 6–9 lin. long, 4–6-leaved. Leaves elongate-linear, acute, flaccid, 5–11 in. long, 2–3 lin. broad. Scapes 9–12 in. long, clothed with narrow white sheaths below, flexuous; racemes very short, subcorymbose, few-flowered. Bracts ovate, acute, 2–3 lin. long. Pedicels 7–8 lin. long. Flowers white, with a few bright purple spots on the petals and sides of the lip, and some yellow in the centre. Sepals spreading, oblong, obtuse, 4 lin. long; lateral adnate to the foot of the column, forming a broad conical chin, 2 lin. long. Petals spreading, linear-oblong, obtuse, with an attenuate base, 4 lin. long. Lip entire, recurved, oblong, obtuse, 4 lin. long; disc velvety. Column clavate, angulate, $1\frac{1}{2}$–2 lin. long; foot half as long as the column.—*Cyrtopera flexuosa*, Rolfe in Kew Bulletin, 1894, 363.

Mozamb. Dist. German East Africa: Kilimanjaro, cultivated specimens, *Smith!*

Originally flowered at Kew in 1894.

64. **E. tayloriana,** *Rolfe.* Plant epiphytic. Pseudobulbs approximate, with a short ovate-oblong base, $\frac{3}{4}$–1 in. long, covered with loose sheaths, crowned by a slender stem, $\frac{3}{4}$–$1\frac{1}{2}$ ft. high, covered with narrow sheaths. Leaves chiefly basal, deciduous (persistent bases only seen). Flowers white and pink, with some yellow on the lip, in axillary and subterminal, few-flowered fascicles, or short racemes on the upper part of the stems, each fascicle having several ovate sheaths at its base. Bracts ovate, acute, $\frac{3}{4}$–1 lin. long. Pedicels 4–5 lin. long. Sepals and petals 4 lin. long; dorsal sepal and petals oblong, obtuse; lateral sepals ovate-oblong, subobtuse, adnate to the foot of the column, forming a saccate chin. Lip entire, oblong or obovate-oblong, obtuse or apiculate, 4 lin. long; disc very velvety and somewhat thickened at the base; spur obsolete. Column stout, 1 lin. long; foot as long as the column. Capsules linear-oblong, 10–16 lin. long.—*Polystachya tayloriana,* Rendle in Journ. Linn. Soc. xxx. 385; Kränzl. in Engl. Pfl. Ost-Afr. C. 155.

Mozamb Dist. German East Africa: between the coast and Uyui, *Taylor!* British Central Africa: Manganja Hills, near Magomoro, growing on stems of arborescent Hypoxis, *Meller,* 7! *Kirk,* 7!

A very remarkable species.

65. **E. guineensis,** *Lindl. in Bot. Reg. t.* 686. Pseudobulbs conical, approximate, $\frac{3}{4}$–1 in. long. Leaves petiolate, lanceolate-oblong or obovate-oblong, acute or apiculate, 4–12 in. long, 2–5 in. broad; petioles $\frac{1}{2}$–5 in. long. Scapes 2–3 ft. high, with several sheaths below; racemes 8–12 in. long, many-flowered. Bracts linear-lanceolate, acuminate, 4–10 lin. long. Pedicels $\frac{3}{4}$–1 in. long. Flowers light purple, with the sepals and petals often dusky brown. Sepals and petals linear-lanceolate, acute or acuminate, 1–$1\frac{1}{2}$ in. long, 2–3 lin. broad. Lip broadly ovate- or obovate-elliptical, obtuse, somewhat undulate; disc smooth; spur attenuate and slender from a conical base, $\frac{3}{4}$–1 in. long. Column clavate, 3 lin. long, broad above.—Lindl. Gen. & Sp. Orch. 181; Lindl. in Journ. Linn. Soc. vi. 131; Bot. Mag. t. 2467; Lodd. Bot. Cab. t. 818; Benth. in Hook. Niger Fl. 530; Reichb. f. Otia Bot. Hamb. i. 66; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 90; Garden, xiv. 322, t. 277. Var. *purpurata,* Reichb. f. ex Kotschy in Sitzb. Akad. Wissenschaft. Wien. li. (1865), 352; Will. Orch. Alb. ii. t. 89. *E. quartiniana,* A. Rich. Tent. Fl. Abyss. ii. 284, t. 81 (*Saccolabium abyssinicum,* on plate); Martelli, Florul. Bogos. 80. *Galeandra quartiniana,* Reichb. f. in Walp. Ann. iii. 552. *Eulophia congoensis,* Cogn. in Journ. Orch. vi. 155; Lindenia, xi. 15, t. 486.

Upper Guinea. Sierra Leone: *G. Don!* Lagos, *Millen,* 186! Niger Territory: Nupe, on shady rocks, *Barter,* 1485! Quorra, *Vogel,* 1!

Nile Land. Eritrea: Ginda, Donkollo, 2900–3300 ft., *Schweinfurth,* 125. Abyssinia: Tigré, near Mai-goua-goua and near Ada-hensé, *Quartin Dillon.* Jur, *Schimper, Schweinfurth,* 1672! Without locality, *Schweinfurth!*

Lower Guinea. Congo: Stanley Pool, *Callewaert.* Angola: Golungo Alto, 1000–2400 ft., in woods, *Welwitsch,* 656! Seventy miles inland from Ambriz, in woods, *Monteiro!*

11. **LISSOCHILUS**, R. Br.; Benth. et Hook. f. Gen. Pl. iii. 536.

Sepals subequal, free, spreading or reflexed, the lateral sometimes adnate to the foot of the column. Petals erect, generally much larger and broader than the sepals, and differently coloured. Lip continuous with the foot of the column, more or less distinctly trilobed; base variously saccate or calcarate; side lobes erect or spreading; the middle one spreading or recurved; disc variously cristate, lamellate, or sometimes smooth. Column erect, clavate, more or less produced into a foot at the base; clinandrium oblique, erect, entire. Anther terminal, operculate, incumbent, semiglobose, conical or more or less bilobed at the apex, imperfectly 2-celled; pollinia 4, ovoid, united in pairs, affixed to a broad stipes and gland. Capsules oblong or somewhat elongate, with prominent thickened angles.—Terrestrial herbs. Stems creeping, often thickened into rhizomes or tubers, leafy at the base. Leaves elongate, lanceolate or linear, plicate. Scapes usually tall, variously sheathed below, loosely racemose above. Flowers generally medium-sized or large, rarely small. Bracts small or narrow.—*Hypodematium*, A. Rich. Tent. Fl. Abyss. ii. 286, t. 83.

A genus of about 100 species, most abundant in Tropical Africa, much less so in Extra-tropical South Africa, and with three or four representatives in the Mascarene Islands. It approaches *Eulophia* very closely, and has been reduced to it, but the majority of the species are very easily separated by the small spreading or reflexed petals, and the broad, often differently coloured petals.

Petals under 5 lin. long.
- Spur oblong or narrow at the apex.
  - Lips 3-lobed.
    - Nerves of disc smooth and obscurely verrucose.
      - Petals under 2 lin. long . . . . 1. *L. parvulus.*
      - Petals $2\frac{1}{2}$–$3\frac{1}{2}$ lin. long.
        - Petals nearly twice as broad as the sepals . 2. *L. pyrophilus.*
        - Petals and sepals subequal.
          - Spur $\frac{3}{4}$ lin. long . . . . . 3. *L. microceras.*
          - Spur 1 lin. long . . . . . 4. *L. heteroglossus.*
    - Nerves of disc strongly verrucose . . . 5. *L. pulchellus.*
  - Lip pandurate . . . . . 6. *L. gracilior.*
- Spur saccate . . . . . 7. *L. verrucosus.*

Petals $\frac{1}{2}$ inch or more long.

Petals narrow, oblong or elliptical.
- *Sepals spathulate or subspathulate (except in 16 and perhaps in 12).
  - Petals not or scarcely twice as broad as the sepals.
    - Raceme 12–14-flowered and rather lax.
      - Sepals 3 lin. broad and obtuse . . . 8. *L. angolensis.*
      - Sepals 2 lin. or less broad and apiculate . 9. *L. Antunesii.*
    - Raceme 20-flowered or more, and rather dense 10. *L. validus.*
  - Petals at least twice as broad as the sepals.
    - †Petals 2–$2\frac{1}{2}$ lin. broad.
      - Front lobe of lip oblong or quadrate-oblong.
        - Lip subentire . . . . . 11. *L. longifolius.*
        - Lip 3-lobed . . . . . 12. *L. caricifolius.*
      - Front lobe of lip linear-ligulate . . . 13. *L. antennisepalus.*

††Petals 3 lin. or more broad.
Disc with three crenulate keels or lamellæ.
Western species.
Lip subpandurate or rhomboid-oblong.
Spur conical-saccate, $2\frac{1}{2}$ lin. long . 14. *L. lindleyanus.*
Spur "cupulate, rounded," minute . 15. *L. platypterus.*
Lip 3-lobed . . . . . 16. *L. Bouliawongo.*
Eastern or Central African species.
Bracts subobtuse . . . . 17. *L. paludicolus.*
Bracts acute or apiculate . . . 18. *L. latus.*
Disc of lip densely villous-scabridulous . 19. *L. Wilsoni.*
**Sepals ligulate to elliptical-oblong, not distinctly broadest towards the apex.
Keels of lip crested.
Spur broadly conical . . . . . 20. *L. Millsoni.*
Spur narrowly conical.
Inner pair of keels gibbous at the base . 21. *L. purpuratus.*
Inner pair of keels semicircular and slender at the base . . . . . 22. *L. Heudelotii.*
Keels of lip thickened or slender, but not crested.
Keels of lip flexuose . . . . . 23. *L. malangensis.*
Keels of lip straight.
Keels of lips thickened nearly to the apex.
Lip trifid . . . . . 24. *L. fallax.*
Lip pandurate.
Keels of lip about seven . . . 25. *L. livingstonianus.*
Keels of lip about three . . . 26. *L. affinis.*
Keels of lip obscure or thickened only at the base.
Spur over $\frac{1}{3}$ as long as the lip . . 27. *L. cornigerus.*
Spur scarcely $\frac{1}{4}$ as long as the lip . 28. *L. mediocris.*
Petals broadly ovate-orbicular or orbicular-elliptical (*see also* 18. *L. latus*).
*Front lobe of lip usually flat or nearly so; petals white or purple.
Bracts subulate-lanceolate, acuminate.
Disc of lip with a pair of calli in front of the spur.
Leaves elongate-linear.
Calli of lip obovate or oblong . . 29. *L. arenarius.*
Calli of lip linear . . . . 30. *L. Roscheri.*
Leaves lanceolate or linear-lanceolate.
Calli of disc quadrate.
Sepals acuminate . . . 31. *L. dilectus.*
Sepals subacute . . . 32. *L. Monteiroi.*
Calli of disc styliform-capitate . . 33. *L. stylites.*
Disc of lip without calli . . . . 34. *L. Buettneri.*
Bracts ovate or broad.
Upper part of spur long and narrow or acute.
Bracts and sepals acuminate.
Keels of lip rather dwarf and slender . 35. *L. Horsfallii.*
Keels of lip elevated into tall crenulate lamellæ.
Spur acuminate . . . . 36. *L. porphyroglossus.*
Spur acute . . . . 37. *L. Sandersoni.*
Bracts and sepals obtuse or apiculate.

Spur conical.
Disc of lip three-keeled.
Disc of lip without basal calli . . 38. *L. roseus.*
Disc of lip with a pair of semicircular calli behind . . . . 39. *L. Ephippilum.*
Disc of lip with a single dwarf callus behind . . . . . 40. *L. Alexandri.*
Disc of lip five-keeled . . . . 41. *L. Nyasæ.*
Spur inflated underneath near the base . 42. *L. macranthus.*
Upper part of spur rather short and blunt.
Keels of lip rather dwarf and entire.
Petals $\frac{3}{4}$–1 in. broad; front lobe of lip 4–6 lin. broad . . . . . 43. *L. elatus.*
Petals 1–$1\frac{1}{4}$ in. broad; front lobe of lip 8–9 lin. broad . . . . . 44. *L. giganteus.*
Keels of lip elevated into tall crenulate lamellæ.
Front lobe of lip longer than broad, subacute 45. *L. Welwitschii.*
Front lobe of lip broader than long, obtuse.
Disc of lip with five lamellæ . . . 46. *L. Schweinfurthii.*
Disc of lip with three lamellæ . . 47. *L. Elliotii.*
**Front lobe of lip convex or with reflexed sides; petals usually bright yellow, sometimes marked with brown or red.
Disc of lip with a pair of erect calli in front of the spur . . . . . 48. *L. congoensis.*
Disc of lip with a transverse membrane at the base of the front lobe . . . . . 49. *L. Frederici.*
Disc of lip smooth or longitudinally keeled.
†Sepals as long as the petals, or nearly so.
Bracts broadly ovate and subobtuse . . 50. *L. Oatesii.*
Bracts oblong or lanceolate and acute.
Spur slender, acute . . . . . 51. *L. malanganus.*
Spur rather stout, subobtuse.
Spur straight, or nearly so.
‡Expanded flowers 1 in. or more diam.
Spur 2 lin. long, nearly as long as the side lobes of the lip.
Sepals about half as broad as long.
Spur tapering almost to the apex.
Petals rhomboid-ovate (Western or central species).
Side lobes of lip broadly oblong or suborbicular-oblong . . . 52. *L. paivæanus.*
Side lobes of lip ligulate . 53. *L. renschianus.*
Petals ovate (Eastern species) 54. *L. papilionaceus.*
Spur stout to near the apex . 55. *L. Carsoni.*
Sepals more than half as broad as long . . . . . 56. *L. Grantii.*
Spur about $1\frac{1}{2}$ lin. long, half to a third as long as the side lobes.
Expanded flowers $1\frac{1}{4}$ in. diam.
Disc of lip three-keeled to near the apex . . . 57. *L. Erythrææ.*

Disc of lip one-keeled above the middle . . . . 58. *L. Krebsii.*
Expanded flowers 1 in. diam.
Disc of lip with 3–5 obscurely crenulate keels . . 59. *L. Rueppellii.*
Disc of lip with 1–3 thickened keels . . . . 60. *L. shirensis.*
Spur about 1 lin. long, less than a fourth as long as the side lobes.
Side lobes of lip 3 lin. broad; front lobe scarcely convex near the base . . . 61. *L. ruwenzoriensis.*
Side lobes of lip 2 lin. broad; front lobe very convex near the base.
Sepals acute . . . 62. *L. oliverianus.*
Sepals obtuse . . . 63. *L. Kirkii.*
‡‡Expanded flowers $\frac{3}{4}$ in. diam. . . 64. *L. micranthus.*
Spur reflexed at the apex . . . 65. *L. Stuhlmanni.*
††Sepals about half as long as the petals.
Spur under 3 lin. long.
Lip pandurate-oblong or obscurely trilobed.
Lip 6–7 lin. long; disc scarcely gibbous.
Front lobe of lip obtuse.
Leaves $\frac{1}{2}$–1 in. broad.
Front lobe of lip half as broad as the petals.
Disc of lip with 9 thick keels 66. *L. calopterus.*
Disc of lip with 5–7 smooth keels . . . . 67. *L. Volkensii.*
Front lobe of lip not half as broad as the petals . . 68. *L. Taylori.*
Leaves 3–5 lin. broad . . . 69. *L. graniticus.*
Front lobe of lip acute or subacute.
Front lobe of lip oblong, with many keels . . . 70. *L. Mechowii.*
Front lobe of lip ligulate, with 5 lamellæ . . . . 71. *L. orthoplectrus.*
Lip 8–11 lin. long; disc distinctly gibbous . . . . . 72. *L. Wakefieldii.*
Lip distinctly trilobed.
Side lobes of lip 2 lin. long . . 73. *L. brevisepalus.*
Side lobes of lip 3 lin. long . . 74. *L. Rendlei.*
Spur 3 lin. or more long.
Side lobes of lip under 2 lin. long.
Gibbosity of front lobe of lip regularly curved (Angolan species) . . 75. *L. aurantiacus.*
Gibbosity of front lobe of lip very oblique (Zambesi species) . . 76. *L. Holubii.*
Side lobes of lip 3 lin. or more long.
Sepals acute.
Front lobe of lip very strongly gibbous.

Front lobe of lip with strong crenulate keels . . .	77. *L. Smithii.*
Front lobe of lip with slightly thickened smooth keels .	78. *L. Johnstoni.*
Front lobe of lip convex or slightly gibbous.	
Front lobe of lip longer than the spur	79. *L. Thomsoni.*
Front lobe of lip equalling or shorter than the spur.	
Sepals broadly ovate . .	80. *L. monticolus.*
Sepals oblong or ovate-oblong.	
Narrowed apex of spur 1½ lin. long	81. *L. Krænzlinii.*
Narrowed apex of spur 2–2½ lin. long . . .	82. *L. milanjianus.*
Sepals obtuse	83. *L. saccatus.*

1. **L. parvulus,** *Rendle in Journ. Bot.* 1895, 196. Scapes 1 ft. or more high, with several basal sheaths; racemes 4–6 in. long, lax. Bracts lanceolate, acuminate, 2–4 lin. long. Pedicels 4 lin. long. Sepals ovate-oblong, acute, 2 lin. long. Petals ovate, acute, 2 lin. long. Lip trilobed, 2 lin. long; side lobes auriculate, somewhat round; front lobe elliptical-oblong, crenulate; disc with 5, thickened, obscurely verrucose nerves; spur conical, ¾–1 lin. long. Column stout, 1½ lin. long.

Nile Land. British East Africa: Kavirondo; Samia, on open dry laterite, *Scott-Elliot,* 7081 !

2. **L. pyrophilus,** *Reichb. f. Otia Bot. Hamb.* i. 65. Rhizome stout. Leaves not seen. Scapes 1½ ft. high, with several loose basal sheaths; racemes 6–10 in. long, laxly many-flowered. Bracts lanceolate, acute, 1½–3 lin. long. Pedicels 5–6 lin. long. Flowers brown. Sepals oblong, apiculate, 2½–3 lin. long. Petals ovate or ovate-oblong, subobtuse, 3 lin. long. Lip trilobed, 2½ lin. long; side lobes semiovate-oblong or suborbicular-oblong, obtuse; front lobe suborbicular-ovate, obtuse, obscurely crenulate; disc with 5 thickened, obscurely crenulate nerves, the lateral ones confluent in pairs; spur conical, oblong, 1 lin. long. Column stout, 1½ lin. long.

Nile Land. British East Africa: Mittuland, near Kuraggera, *Schweinfurth,* 2795!

3. **L. microceras,** *Reichb. f. Otia Bot. Hamb.* ii. 115. Leaves elongate-linear, acuminate, 12–14 in. long. Scapes ¾–1¼ ft. high, with about 3 short sheaths below; racemes 6–7 in. long, many-flowered. Bracts lanceolate, acuminate, 3–6 lin. long. Pedicels 5–8 lin. long. Sepals oblong, acute, 3 lin. long. Petals broadly elliptical, obtuse, 3–3¼ lin. long. Lip trilobed, 3½ lin. long; side lobes roundish-oblong, apiculate; front lobe suborbicular-oblong, obtuse, crenulate; disc flat, with

5 keels; spur narrowly conical, slightly curved, $\frac{3}{4}$ lin. long. Column stout, $1\frac{1}{4}$ lin. long.

Mozamb. Dist. British Central Africa: Shire Highlands; Mt. Sochi, 3000 ft. *Kirk* (*Eulophia* 4)! near Mt. Chiradzulu, in open places among short grass, *Kirk!* Manganja Hills, Analizewa, 3000 ft., *Meller!*

4. **L. heteroglossus,** *Reichb. f. Otia Bot. Hamb.* ii. 115. Scapes 8–9 in. long, with 2–3 imbricate, basal sheaths; racemes 6 in. long, lax. Bracts linear-lanceolate, acuminate, 2–4 lin. long. Pedicels 4–5 lin. long. Sepals and petals oblong, subobtuse, $2\frac{1}{2}$–3 lin. long; petals a little broader than the sepals. Lip trilobed, $2\frac{1}{2}$–3 lin. long; side lobes semiovate, subacute; front lobe broadly oblong or elliptical-oblong, emarginate, slightly crenulate; disc 5-keeled; spur oblong-cylindrical, obtuse, 1 lin. long. Column short, apiculate.

Mozamb. Dist. British Central Africa: Upper Shire Valley, near Zemika, 2000 ft., *Kirk!*

5. **L. pulchellus,** *Rendle in Journ. Bot.* 1895, 196. Scape 6–9 in. high, with several loose basal bracts; racemes 4–6 in. long, laxly many-flowered. Bracts lanceolate, acuminate, 3–5 lin. long. Pedicels 5–7 lin. long. Sepals oblong, subobtuse, 3 lin. long; lateral adnate to the foot of the column. Petals broadly ovate, subobtuse, $3\frac{1}{2}$ lin. long. Lip trilobed, $3\frac{1}{2}$ lin. long; side lobes oblong, obtuse, $\frac{1}{2}$ adnate to the column; front lobe elliptical-oblong, obtuse, crenulate; disc with several minutely verrucose nerves, somewhat convex in the middle of the front lobe; spur conical, 2 lin. long. Column stout, $1\frac{1}{2}$ lin. long; foot short.

Mozamb. Dist. German East Africa: Karagwe; Kibwera, 4000–5000 ft., in dry places after burning, *Scott-Elliot*, 8126!

6. **L. gracilior,** *Rendle in Journ. Bot.* 1895, 194. Scape slender, 1–$1\frac{1}{2}$ ft. high, with a few short tubular sheaths below; racemes 3–4-flowered, lax. Bracts subulate or lanceolate-subulate, acuminate, 3–5 lin. long. Pedicels $\frac{3}{4}$–1 in. long. Sepals lanceolate-oblong, apiculate, 4–$4\frac{1}{2}$ lin. long. Petals elliptical-oblong, obtuse or minutely apiculate, 4–$4\frac{1}{2}$ lin. long. Lip subpandurate, $4\frac{1}{2}$–5 lin. long; base auriculate, broadly rounded; front lobe quadrate, obtuse or emarginate; disc convex with 5–7 fleshy, slightly crenulate keels, two of them being stouter and gibbous in front of the spur; spur conical, 2 lin. long. Column clavate, $2\frac{1}{2}$ lin. long.

Mozamb. Dist. German East Africa: Urundi, N. of Lake Tanganyika, 4000–5000 ft., *Scott-Elliot*, 8173, in part! British Central Africa: Shire Highlands, at Mandala, *Scott-Elliot*, 8499!

Var *angusta*, Rendle, l.c. 195. Differs in its rather narrower segments, and the slightly thicker nerves of the disc.

Nile Land. British East Africa: on dry grassy hills, east of Lake Albert Edward Nyanza, *Scott-Elliot*, 8075!

Mozamb. Dist. German East Africa: Karagwe, 4000–5000 ft., *Scott-Elliot*, 8209!

7. **L. verrucosus,** *Rolfe.* Scape 6–9 in. high, with a few loose basal sheaths; racemes $2\frac{1}{2}$–3 in. long, many-flowered. Bracts ovate-lanceolate, acuminate, 2–4 lin. long. Pedicels 3–4 lin. long. Sepals ovate or ovate-oblong, acute or subacute, 3 lin. long. Petals orbicular or broadly ovate-orbicular, obtuse, $3\frac{1}{2}$ lin. long. Lip trilobed, $3\frac{1}{2}$ lin. long; side lobes broadly oblong, obtuse; front lobe orbicular-oblong, obtuse; disc with several thick and almost confluent verrucose nerves; spur obtusely saccate, nearly obsolete. Column stout, $1\frac{1}{4}$ lin. long.

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan,* 1067!

8. **L. angolensis,** *Reichb. f. Otia Bot. Hamb.* i. 64. Rhizome stout. Leaves linear-lanceolate, subacute, attenuate below, 5–9 in. long, $\frac{3}{4}$–$1\frac{1}{4}$ in. broad. Scapes over $1\frac{1}{2}$ ft. long; base not seen; racemes 9 in. long, lax. Bracts lanceolate or linear-lanceolate, acute, $\frac{1}{3}$–1 in. long. Pedicels 10–12 lin. long. Sepals subspathulate-oblong, obtuse, concave, somewhat fleshy, 9 lin. long. Petals elliptical-oblong, obtuse, membranous, subconcave. Lip trilobed, 9 lin. long; side lobes oblong, obtuse and undulate at the apex; front lobe quadrate, obtuse, reflexed and undulate at the sides; disc with 3 approximate keels, crenulate at the base of the front lobe, suddenly enlarged into calli below the middle; spur saccate, truncate, broader than long, united at the sides to the foot of the column. Column clavate, incurved, 5 lin. long; foot half as long as the column.—*Cymbidium angolense,* Reichb. f. in Flora, 1865, 188.

Lower Guinea. Angola: Huilla, near Quibbe and Neala, in open marshy places near rivers, *Welwitsch,* 734!

9. **L. Antunesii,** *Rolfe in Bolet. Soc. Brot.* vii. 236. Scapes $1\frac{1}{4}$–$1\frac{1}{2}$ ft. long, with a few short sheaths below; racemes 6–7 in. long, laxly many-flowered. Bracts lanceolate or linear-lanceolate, acuminate, 5–7 lin. long. Pedicels 10–12 lin. long. Sepals narrowly subspathulate, with a minute apiculus, dark, somewhat fleshy, 9–11 lin. long. Petals oblong, obtuse, attenuate below, membranous, 8–9 lin. long. Lip pandurate-oblong, 9–10 lin. long; side lobes rounded-oblong; front lobe quadrate-oblong, obtuse; disc with three crenulate keels; spur conical-saccate, obtuse, $1\frac{1}{2}$ lin. long. Column clavate, 6 lin. long.

Lower Guinea. Angola: Huilla, *Antunes,* 19!

10. **L. validus,** *Rendle in Journ. Bot.* 1895, 197. Scapes stout, 3 ft. or more long, with a few short bracts; racemes 1 ft. long, many-flowered. Bracts lanceolate or oblong-lanceolate, subobtuse or acute, 4–8 lin. long. Pedicels 9–12 lin. long. Sepals subspathulate-oblong, obtuse, 8–10 lin. long, slightly concave at the apex. Petals elliptical-oblong, obtuse, 8–10 lin. long. Lip trilobed, 10–12 lin. long; side lobes narrowly oblong, obtuse at the apex; front lobe quadrate-oblong, obtuse, undulate; disc with 3 rounded, fleshy keels,

stouter at the base, becoming elevated into crenulate lamellæ at the apex; spur conical-saccate, 3 lin. long. Column clavate, 5–6 lin. long.

Mozamb. Dist. German East Africa: Urundi, *Scott-Elliot*, 8347!

Var. *minor*, Rendle, l.c. 197. Flowers slightly smaller than in the type.

Nile Land. British East Africa: Uganda; Kampala, *Scott-Elliot*, 7305!

This probably only represents a less vigorous plant.

11. **L. longifolius,** *Benth. in Hook. Niger Flora*, 530. Rhizome thickened. Leaves elongate-linear, acute, 2–2½ ft. long, 4–6 lin. broad. Scapes 2½–3 ft. long, with a few short bracts below; racemes 5 in. long, lax. Bracts ovate or ovate-lanceolate, acute, 2 lin. long. Pedicels 11–13 lin. long. Flowers white and red. Sepals very narrowly spathulate, obtuse, 6–8 lin. long. Petals oblong or elliptical-oblong, apiculate, 5–6 lin. long. Lip subentire, 8 lin. long; side lobes rounded; front lobe quadrate-oblong, obtuse or emarginate, undulate; disc with 3 dwarf, rounded keels below and 5 papillose-crested keels above; spur conical-saccate, obtuse, 1–1¼ lin. long. Column clavate, 4½ lin. long; anther apiculate.—Lindl. in Journ. Linn. Soc. vi. 133, in part; Reichb. f. in Walp. Ann. iii. 553; Flora, 1878, 77; Otia Bot. Hamb. i. 65.

Upper Guinea. Niger Delta: Grand Bassa, *Vogel*, 8! *Ansell!* Bonny, in open, dry savannahs, *Kalbreyer* (ex *Reichenbach*).

12. **L. caricifolius,** *Reichb. f. in Linnæa*, xli. 74. Leaves linear, acute, strongly veined, 2 ft. long. Scapes elongate, with a few sheaths; apex few-flowered. Bracts triangular, much exceeded by the pedicellate ovary. Sepals linear-ligulate. Petals oblong. Lip cucullate, trilobed in front; side lobes rather obtuse; front lobe semioblong; disc with 3 keels extending from the base on to the middle lobe, there becoming densely muriculate; spur short, conical, ascending, curved.

Lower Guinea. Gaboon, *Griffon de Bellay.*

Only known to me from the original description, where it is said to be allied to *L. longifolius*, Benth., but the lip is very different.

13. **L. antennisepalus,** *Reichb. f. in Flora*, 1882, 533. Sepals cuneately linear-ligulate, obtuse, narrow; base cuneate. Petals ligulate, obtuse. Lip trilobed; side lobes short, semiovate; front lobe linear-ligulate, obtuse, somewhat crisped; disc with 3 elevated, denticulate keels at the base and 5 muriculate lines in front; spur conical, apiculate, retrorse, or straight and deflexed, minute. Column trigonous, apiculate; anther with a single obtuse tubercle.

Lower Guinea. Angola: Malange, *Mechow*, 419.

Only known to me from the original description.

14. **L. lindleyanus,** *Reichb. f. Otia Bot. Hamb.* i. 65. Rhizome stout, creeping. Leaves lanceolate-linear, acute, 2–3 ft. long, 8–12 lin. broad. Scapes 4–6 ft. long, with several sheathing bracts below and sometimes a side branch above; racemes 6–12 in. long, laxly many-flowered. Bracts oblong-lanceolate or ovate-oblong, sub-

acute, 2½–8 lin. long. Pedicels 9–10 lin. long. Flowers yellow. Sepals subspathulate, obtuse, 7–8 lin. long. Petals broadly elliptical-oblong, obtuse, 7–8 lin. long. Lip subpandurate-oblong, 8–9 lin. long; side lobes rounded, undulate; front lobe quadrate-oblong, obtuse or emarginate; disc with 2 stout, rounded keels below, nearly obsolete in the middle, elevated into 3 crenulate lamellæ above the base of the front lobe; spur conical-saccate, obtuse, 2½ lin. long. Column clavate, 5 lin. long.—*L. longifolius*, Lindl. in Journ. Linn. Soc. vi. 133, in part (not Benth.).

Upper Guinea. Niger Territory: Nupe, in swamps, *Barter*, 1486!

15. **L. platypterus,** *Reichb. f. in Flora*, 1882, 533. Sepals oblong-ligulate from a very narrowly cuneate base, very narrowly antennæform, subacute. Petals elliptical, obtuse, very large. Lip rhomboid-oblong, retuse, obtuse-angled on either side, plicate, crispulate in front; disc with 3 rhomboid, elevated keels, denticulate in front, of which the lateral become bivalved at the apex by the addition of two smaller ones; spur cupulate, rounded, minute. Column obtuse-angled at either side below the clinandrium; apex apiculate. Anther with two horns.

Lower Guinea. Angola: Malange, *Mechow*, 415.

Only known to me from the original description.

16. **L. Bouliawongo,** *Reichb. f. in Flora*, 1865, 188. Scapes strong, many-flowered. Bracts ovate, acute, slightly emarginate on each side near the apex, 1 in. long. Pedicels longer than the bracts. Flowers larger than in *Galeandra Baueri*, Lindl. Sepals lanceolate, acute. Petals dilated, oblong, acute; base cuneate. Lip trilobed; side lobes obtuse-angled; front lobe broadly ligulate, retuse, crisped; disc with 3 elevated keels; spur short, conical. Column semiterete; anther crested, shortly 2-horned at the apex.—Rolfe in Gard. Chron. 1893, xiii. 684; *Galeandra Bouliawongo*, Reichb. f. in Bot. Zeit. 1852, 935; Walp. Ann. vi. 650.

Lower Guinea. Gaboon: without locality (ex *Reichenbach.*)

Only known to me from the original description. It is said to be called *Boulia Wongo* and used as a remedy against colic.

17. **L. paludicolus,** *Reichb. f. Otia Bot. Hamb.* i. 63. Rhizome stout. Leaves lanceolate-linear, acute, 1½–2 ft. long, 7–9 lin. broad. Scapes 2½–3 ft. long, with a few sheaths below; racemes 9–10 in. long, laxly many-flowered. Bracts ovate-oblong, subobtuse or apiculate, 2–4 lin. long. Pedicels 12–14 lin. long. Flowers yellow. Sepals narrowly subspathulate, obtuse, 7–8 lin. long. Petals oblong or elliptical-oblong, obtuse, 7–8 lin. long. Lip obscurely trilobed or pandurate-oblong, 8–9 lin. long; side lobes very short, broadly rounded; front lobe subquadrate, obtuse or emarginate; disc with 3 keels, becoming elevated, crenulate lamellæ in front, and the lateral also thickened behind; spur saccate, obtuse, 2½–3 lin. long. Column clavate, 5–5½ lin. long.

Nile Land. British East Africa: Niamniam, North of the Ibba River, *Schweinfurth*, 3983!

18. **L. latus,** *Rolfe.* Racemes 6–8 in. long, many-flowered; base of scape not seen. Bracts ovate-lanceolate, acute, 3–5 lin. long. Pedicels $\frac{3}{4}$–$1\frac{1}{4}$ in. long. Sepals oblong, obtuse, 8–9 lin. long. Petals broadly subspathulate, obtuse, 8–9 lin. long. Lip pandurate, oblong, 9–10 lin. long; side lobes short, broadly rounded; front lobe quadrate, obtuse or emarginate, undulate; disc with 3 crenulate keels, becoming elevated lamellæ in front, and the lateral also broad and thick behind; spur conical-saccate, 3–$3\frac{1}{2}$ lin. long. Column clavate, 5 lin. long.

Mozamb. Dist. British Central Africa: Lake Moero, *Carson*, 28!

19. **L. Wilsoni,** *Rolfe.* Scapes 1–$1\frac{1}{2}$ ft. high, slender, with a few short sheaths. Bracts ovate or ovate-oblong, acute, 2–3 lin. long. Pedicels 8–10 lin. long. Flowers white and pink. Sepals narrowly subspathulate, obtuse, 8–9 lin. long; lateral nearly free from the foot of the column. Petals elliptical, obtuse, 7–8 lin. long. Lip pandurate-oblong, obtuse, undulate; disc verrucose or villous-scaberulous in front; spur broadly saccate, $1\frac{1}{2}$ lin. long. Column clavate, 4–5 lin. long; foot short.

Nile Land. British East Africa: Usongora, swampy plains, *Wilson*, 23!

20. **L. Millsoni,** *Rolfe.* Scape 2–$2\frac{1}{2}$ ft. high, with a few sheaths below; racemes 6–8 lin. long, lax. Bracts linear-lanceolate, acuminate, 4–11 lin. long. Pedicels 8–11 lin. long. Sepals lanceolate or oblong-lanceolate, acute, 11–13 lin. long. Petals oblong or elliptical-oblong, obtuse, or subacute, 10–11 lin. long. Lip trilobed or subentire, 11–13 lin. long; side lobes narrowly oblong, obtuse, erect; front lobe suborbicular, obtuse, undulate; disc with 3–5 slender keels behind and about 9 stouter crenulate ones on the front lobe; spur conical, obtuse, $1\frac{1}{2}$–2 lin. long. Column clavate, 4–5 lin. long; foot half as long as the column.

Upper Guinea. Western Lagos: Ilorin, on savannahs, *Rowland!* Yoruba, Ayorun, *Millson*, 86!

Lower Guinea? Upper Congo, *Dybowski!*

21. **L. purpuratus,** *Lindl. in Journ. Linn. Soc.* vi. 133 (331 by error). "Tubers like kidney potatoes, in chains nearly a yard long." (*Barter.*) Leaves elongate-linear, acute, 1–$1\frac{3}{4}$ ft. long, 3–5 lin. broad. Scapes 3–$4\frac{1}{2}$ ft. high, with several short sheaths below; racemes 9–12 in. long, many-flowered. Bracts subulate-lanceolate, long acuminate, $\frac{1}{2}$–1 in. long. Pedicels $\frac{3}{4}$–$1\frac{1}{4}$ in. long. Flowers rose or flesh-coloured, with a purple lip. Sepals oblong, acute or subobtuse, a little undulate, 9–12 lin. long; dorsal a little shorter than the lateral. Petals ovate-oblong, obtuse, a little undulate, 9–12 lin. long, nearly twice as broad as the sepals. Lip trilobed, 10–12 lin. long; side lobes broadly rounded; front lobe ovate-oblong, obtuse; disc with two prominent or muricate-tuberculate keels in the

centre; spur conical, with an acute apex, 1½–2 lin. long.—Reichb. f. in Flora, 1865, 188; Reichb. f. Otia Bot. Hamb. i. 63; ii. 75, 114; *Limodorum cristatum*, Sw. in Schrad. Neues Journ. i. 86; Pers. Syn. Pl. ii. 521; Lindl. Gen. & Sp. Orch. 185; *Eulophia cristata*, Steud. Nom. Bot. ed. II. i. 605; *Limodorum articulatum*, Schum. & Thonn. Beskr. Guin. Pl. 399; *Eulophia articulata*, Lindl. Gen. & Sp. Orch. 181; *Galeandra longibracteata*, Lindl. in Journ. Linn. Soc. vi. 133; *Eulophia longibracteata*, Durand & Schinz, Conspect. Fl. Afr. v. 22.

Upper Guinea. North bank of the River Gambia: *Ozanne*, 21! Gambia: Bathurst, in dry sandy soil, *Haydon!* Guinea, *Thonning!* Sierra Leone: on dry ground near Franziga, *Scott-Elliot*, 5047! and without precise locality, *Afzelius! Whitfield!* Lagos: Yoruba, *Millson*, 24! Western Lagos, in grassy savannahs, *Rowland!* Abbeokuta, *Barter*, 3331! *Irving*, 154! Bornu: Musgu, at the root of the Doom Palm, *Vogel*, 75!

Nile Land. British East Africa: Jur, *Schweinfurth*, 1584. Niamniam, *Schweinfurth*, ser. 2, 22 (ex *Durand & Schinz*).

Lower Guinea? Upper Congo: *Dybowski!*

22. **L. Heudelotii,** *Reichb. f. Otia Bot. Hamb.* i. 63; ii. 114. Peduncle tall, with acute sheaths below; racemes 8 in. long. Bracts linear-lanceolate or subulate, 7 lin. long. Sepals ligulate, obtuse, membranous, 7 lin. long. Petals oblong, subobtuse, membranous, 7 lin. long. Lip trilobed; side lobes obtuse-angled; front lobe oblong, ligulate, serrate denticulate, extending forwards; disc with a pair of semicircular lamellæ in front of the spur, and 5 crenulate keels about the middle; spur arcuate, short, retrorse. Column trigonous. Anther with a single short horn at the apex.

Upper Guinea. Senegal, *Heudelot!*

Only known to me from the original description, but according to Reichenbach it is near *L. purpuratus*, Lindl., from which it is distinguished by the arrangement of the keels on the lip.

23. **L. malangensis,** *Reichb. f. Otia Bot. Hamb.* ii. 114. Scapes tall, with large sheaths; racemes elongate, 10 in. long, very lax-flowered. Bracts lanceolate, aristate, not half as long as the pedicels. Sepals ligulate, apiculate. Petals oblong. Lip oblong, with very obscure rounded auricles at the base; disc with 7 flexuose keels, the pair next to the median one gibbous in front of the spur; spur shortly conical, rounded-capitate at the apex.—Durand & Schinz, Conspect. Fl. Afr. v. 29, in part.

Lower Guinea. Angola: Malange, *Mechow*, 261.

Only known to me from the original description.

24. **L. fallax,** *Reichb. f. Otia Bot. Hamb.* ii. 114, 115. Leaves lanceolate, acuminate, produced shortly before flowering. Scapes slender, 2–3 ft. high, with a few sheaths; racemes lax. Bracts very narrowly setaceous from a triangular base, not half as long as the pedicels. Flowers lilac. Sepals ligulate, acute. Petals oblong, apiculate. Lip pandurately trilobed; side lobes semiovate; front lobe oblong, crenulate; disc with 7 straight keels, the pair next to the median one gibbous

in front of the spur; spur short, conical, apiculate. Column clavate; anther minutely apiculate.—Reichb. f. in Flora, 1885, 379.

Nile Land. British East Africa: Mombasa, among grass, *Hildebrandt*, 1951.

Also found in the Comoro Islands. I have not seen the Mombasa plant.

25. **L. livingstonianus,** *Reichb. f. Otia Bot. Hamb.* ii. 114. Rhizome stout. Scapes $1\frac{1}{4}$–$2\frac{1}{2}$ ft. high, with a few sheaths below; racemes 4–10 in. long, lax. Bracts linear-lanceolate or subulate-lanceolate, acuminate, 3–9 lin. long. Pedicels $\frac{3}{4}$–1 in. long. Flowers purple, or the sepals and petals white, veined with purple. Sepals oblong, apiculate, 6–8 lin. long. Petals elliptical, obtuse or minutely apiculate, 5–7 lin. long. Lip pandurate-oblong, obtuse, undulate, convex, with reflexed sides, 5–7 lin. long; basal auricles broadly rounded or obtuse; disc with 2 prominent lamellæ in front of the spur, and 5–9 more or less prominent, sometimes crenulate, keels or slightly thickened nerves in the middle. Spur narrowly conical, $2\frac{1}{2}$–3 lin. long. Column clavate, 4–5 lin. long.

Nile Land. British East Africa: Uganda, common in grassy jungles, *Wilson*, 40! Nyika country, near Mombasa, *Wakefield!*

Mozamb. Dist. British Central Africa: Manganja Hills, *Waller! Meller* (*Lissochilus* 4)! Mlanje Mountain, *McClounie! Whyte!* Shire Highlands, in woods between Blantyre and Metope, *Scott!*

26. **L. affinis,** *Rendle in Journ. Bot.* 1895, 193. Scapes $1\frac{1}{2}$–$2\frac{1}{4}$ ft. high, with 3 short sheaths below; racemes about 6-flowered. Bracts lanceolate-subulate, acute, 3–4 lin. long. Pedicels 9–11 lin. long. Sepals elliptic-oblong, apiculate, 8–9 lin. long. Petals broadly elliptical, obtuse or minutely apiculate, 8–9 lin. long. Lip subentire, elliptic-oblong, obtuse, undulate, convex, with reflexed sides, cordate-auriculate at the base, 8–10 lin. long; disc with 3 obtuse, fleshy keels about the middle, and the nerves in front somewhat swollen; spur conical, subobtuse, 3–$3\frac{1}{2}$ lin. long. Column clavate, 4 lin. long.

Mozamb. Dist. German East Africa: Urundi, 4000–5000 ft., *Scott-Elliot*, 8173!

27. **L. cornigerus,** *Rendle in Journ. Bot.* 1895, 194. Scapes $1\frac{3}{4}$–2 ft. high, with a few short sheaths below; racemes about 5 in. long, 8–10-flowered. Bracts lanceolate, acuminate, 6–9 lin. long. Pedicels 9–10 lin. long. Sepals oblong-lanceolate, apiculate or aristate, 8–9 lin. long. Petals elliptic-oblong, apiculate, 8–9 lin. long. Lip broadly pandurate-oblong, obtuse, 8–9 lin. long; side lobes auriculate, broadly rounded; disc with 2 obtuse, very prominent, fleshy keels, gibbous in front of the spur, much smaller above; nerves of the disc very slightly thickened; spur horn-shaped, recurved, 3–$3\frac{1}{2}$ lin. long. Column clavate, 4 lin. long.

Nile Land. British East Africa: East side of Albert Edward Nyanza, at Kahimbe, in dry grassy plains, 4000–5000 ft., *Scott-Elliot*, 8031!

Var. *minor*, Rendle, l.c. 194. Plant smaller. Flowers smaller and of a deeper colour.

Nile Land. British East Africa: Buddu, *Scott-Elliot*, 7486!

Hardly distinguishable from the type.

28. **L. mediocris,** *Rendle in Journ. Bot.* 1895, 193. Scapes 2½ ft. or more high, with a few sheaths; racemes lax (imperfect). Bracts oblong-lanceolate, acute, 7 lin. long. Pedicels 1 lin. long. Sepals oblong-lanceolate, acute or apiculate, somewhat curved at the apex, 9–11 lin. long. Petals obovate-oblong, obtuse or apiculate, 9–11. lin. long. Lip subpandurate-oblong, obtuse, 10–11 lin. long, slightly undulate, cordate-auriculate at the base; disc with a pair of tall, narrow, suborbicular lamellæ in front of the spur, passing into very slightly thickened nerves; spur conical, subobtuse, 2½ lin. long. Column clavate, 5 lin. long.

Nile Land. British East Africa: Kavirondo, at Samia, 4000 ft., *Scott-Elliot*, 7128!

29. **L. arenarius,** *Lindl. in Journ. Linn. Soc.* vi. 133. Rhizome stout, flattened. Leaves linear or lanceolate-linear, acute, 1–1½ ft. long, 4–6 lin. broad. Scapes 2–3½ ft. high, with several long sheaths below; racemes 4–8 in. long, 6–10-flowered. Bracts linear-lanceolate, acuminate, ½–1¼ in. long, ¾–1 lin. broad. Pedicels ¾–1 in. long. Flowers usually borne in advance of the leaves, purple, with dusky or olivaceous sepals, and some yellow inside the spur. Sepals triangular-lanceolate, acute or acuminate, 8–15 lin. long. Petals broadly elliptical or suborbicular, 8–15 lin. long. Lip broadly pandurate, 10–15 lin. long; side lobes broadly rounded; front lobe very broad, truncate or emarginate; disc with a pair of quadrate, oblong-obovate or transversely oblong calli in front of the spur, and the median nerve more or less thickened and crenulate, sometimes distinctly keeled; spur saccate, obtuse, 3–5 lin. long. Column clavate, 5–8 lin. long.—Reichb. f. Otia Bot. Hamb. i. 61; ii. 75; N. E. Br. in Gard. Chron. 1885, xxiv. 307. *Eulophia arenaria*, Bolus in Journ. Linn. Soc. xxv. 185. *Limodorum cucullatum*, Afzel. ex. Sw. in Vet. Acad. Handl. Stockh. 1800, 243 (name only); Pers. Syn. Pl. ii. 521.

Upper Guinea. Sierra Leone: Falaba, on bare ground, lately burnt, *Scott-Elliott*, 5144! and without precise locality, *Afzelius!* Yoruba, *Millson*, 23! Niger Territory: Nupe, savannahs in a sandy soil, *Barter*, 1488! without locality, *Baikie!*

Lower Guinea? Upper Congo, *Dybowski!*

Nile Land. British East Africa: Jur, *Schweinfurth*, 1864! Mombasa, *Hildebrandt*, 1950! Rabai Hills, near Mombasa, *Taylor!* Nyika country, near Mombasa, *Wakefield!* E. side of Albert Edward Nyanza, on dry grassy hills at 4000–5000 ft., *Scott-Elliot*, 8032! Lake Albert Nyanza; Unyoro, in grassy jungle, *Wilson*, 38!

Mozamb. Dist. Zanzibar, *Kirk!* German East Africa: Uyui, *Taylor!* Kilimanjaro, 5000–6000 ft., *Taylor!* below Marangu, 3900 ft., *Volkens*, 2115! Msalala, *Hannington!* Portuguese East Africa: Zambesi District; Shupanga, *Kirk! Meller!* near Morambala, *Kirk!* Zambesi Delta; Kongoni River, *Kirk!* British Central Africa: Shire Highlands, 4000–5000 ft., *Scott-Elliot*, 8621! Mlanje, *Whyte!* Manganja Hills, *Kirk!* North Nyasaland, Elephant Marsh in M'Kyusa's country, *Scott!* Kavala, *Carson!* Nyasaland, *Buchanan!* Lake Tanganyika, *Cameron!* Fwambo, *Carson*, 36!

A very widely diffused and variable species, found also in the Comoro Islands and Natal.

30. **L. Roscheri,** *Reichb. f. Otia Bot. Hamb.* i. 62. Leaves linear, acuminate. Racemes few-flowered. Flowers small, lilac. Sepals triangular, acuminate, 6 lin. long, 1½ lin. broad at the base. Petals elliptical, 6 lin. long, 1½ lin. broad. Lip pandurate, ¾ in. long; side lobes very broad, obtuse-angled; front lobe distinctly narrower than the side lobes, emarginate or bilobed; disc with 4 small keels at the base in front of the spur; spur obtuse. Anther obtuse, conical, not horned.

Nile Land. British East Africa: Jur; at Bongo on the river Gefal, *Heuglin.*

Mozamb. Dist. Zanzibar, *Roscher.*

Only known to me from the original description, but is possibly a small-flowered form of the variable *L. arenarius*, Lindl., as the description does not indicate any very essential difference.

31. **L. dilectus,** *Reichb. f. Otia Bot. Hamb.* i. 62. Rhizome stout. Leaves petiolate, lanceolate, acuminate, 9–12 in. long, ½–1¼ in. broad. Scapes 2½–3 ft. high; racemes 6 in. long, about 4–9-flowered. Bracts linear-lanceolate, acuminate, ½–1 in. long. Pedicels 1–1½ in. long. Sepals triangular-lanceolate, acuminate, undulate, 10–12 lin. long. Petals broadly elliptical, obtuse, 11–12 lin. long, 8–9 lin. broad. Lip broadly pandurate or trilobed, 15–18 lin. long; side lobes rounded; front lobe very broadly obovate, truncate or emarginate at the apex; disc with a pair of quadrate calli in front of the spur; spur saccate, obtuse, 3–4 lin. long. Column clavate, incurved, 8 lin. long.—*L. arenarius*, Reichb. f. in Flora, 1865, 188 (not Lindl.).

Lower Guinea. Angola: Pungo Adongo; Cuanza River and Luxillo River, 3800 ft., in thickets, *Welwitsch*, 686!

Very near *L. arenarius*, Lindl., but differs in its broader leaves, which appear with the inflorescence, and in its usually larger flowers.

Var. *minor*, Reichb. f. in Flora, 1882, 533. Plant smaller and more slender. Leaves only half as broad. Lip with more slender calli.

Lower Guinea. Angola: Malange, *Mechow*, 314, 528.

32. **L. Monteiroi,** *Rolfe.* Pedicels 1½ in. long. Sepals lanceolate-oblong, acute or shortly acuminate, 16–17 lin. long. Petals suborbicular-elliptical, 15–16 lin. long. Lip broadly pandurate or trilobed, 16–17 lin. long; side lobes broadly rounded; front lobe transversely oblong, truncate or retuse; disc with a pair of large, narrow, rounded calli in front of the spur, and 1–2 narrow, crenulate keels on the base of the front lobe; spur saccate, very obtuse, 3 lin. long. Column clavate, 11 lin. long.

Lower Guinea. Angola: Benguela, on wild fig-trees, *Monteiro!*

Like a giant form of *L. dilectus, Reichb. f.*, the flowers being much larger, but the sepals are less acuminate.

33. **L. stylites,** *Reichb. f. Otia Bot. Hamb.* i. 61; ii. 75. Leaves linear-lanceolate, acute, attenuate at the base into a petiole, 2 ft. long, 12–15 lin. broad. Peduncles 6-flowered. Bracts linear-lanceolate, long aristate or acuminate, ¾–1 in. long. Pedicels 1 in. long. Sepals

triangular, aristate or acuminate, 10–15 lin. long. Petals broadly elliptical, obtuse, 12–13 lin. long, 8–9 lin. broad. Lip very broadly pandurate, emarginate or bilobed, obtuse-angled, 1–1¼ in. long, and broad; disc with a pair of styliform, capitate or bilobed calli in front of the spur, and the median nerve slightly thickened and obscurely crenulate below; spur saccate, very obtuse, 3–4 lin. long.—Reichb. f. in Flora, 1885, 379.

Lower Guinea. Angola: Malange, *Mechow*, 203, and without locality, 1500–1800 ft., *Micholitz !*

South Central. Congo Free State: Monbuttu; near Munsa, *Schweinfurth*, ser. ii. 21 !

Closely allied to *L. dilectus*, Reichb. f. and chiefly differing in the styliform crest. I have not seen the original specimens, but the one collected by Micholitz apparently belongs to the same species. It is also found in the Comoro Islands, according to Reichenbach.

34. **L. Buettneri,** *Kränzl. in Engl. Jahrb.* xvii. 53. Scapes strong, over 3 ft. high, with 7–8 acute sheaths; racemes about 30-flowered. Bracts narrowly lanceolate, aristate, shorter than the ovary. Flowers red, 1–1¼ in. diam. Sepals ligulate, acute and apiculate. Petals obovate, twice as broad as the sepals, retuse or emarginate, with an apiculus in the sinus. Lip trilobed; side lobes erect, triangular, rounded at the apex; front lobe narrowly cuneate below, much dilated and bilobed above, with an apiculus in the sinus; spur very obtusely saccate. Column a third as long as the lip, dilated above and very slenderly margined.

Upper Guinea. Togoland; Bismarcksburg, Augauje Steppe, *Büttner*, 415.

Only known to me from the original description, where the affinity is not stated.

35. **L. Horsfallii,** *Batem. in Bot. Mag. t.* 5486. Rhizome stout. Leaves elongate-lanceolate, acute or acuminate, 2–3 ft. long, 3–4 in. or more broad. Scapes about 4 ft. high, with several sheaths; racemes 12–16 in. long. Bracts ovate or ovate-oblong, acute or acuminate, ¾–1¼ in. long. Pedicels 1½–2¼ in. long. Sepals lanceolate-oblong, acute or subacuminate, 9–11 lin. long, purple; lateral adnate to the foot of the column. Petals suborbicular-elliptical, obtuse or subapiculate, 10–12 lin. long, pinkish-white. Lip trilobed, 12–13 lin. long; side lobes broadly rounded, and green veined with brown; front lobe ovate-oblong, subobtuse or apiculate, undulate, purple; disc with 3 dwarf, crenulate keels about the middle; spur conical, with an acute apex, 3–4 lin. long. Column clavate, 6–7 lin. long; foot half as long as the column.—Batem. Sec. Cent. Orch. t. 121; Reichb. f. in Flora, 1865, 188; Kränzl. in Engl. Jahrb. vii. 439.

Upper Guinea. Old Calabar River, cultivated specimens, *Cheetham !*

Lower Guinea. Gaboon, *Soyaux* (ex *Kränzlin*). Lower Congo, near Ponto da Lenha, *Naumann*, 157 (ex *Kränzlin*).

Mozamb. Dist. Manganja Hills, near Chipindu, 2000 ft., *Kirk !*

Originally flowered in the collection of J. B. Horsfall, Esq., in 1864.

36. **L. porphyroglossus,** *Reichb. f. Otia Bot. Hamb.* i. 61. Leaves elongate-lanceolate, acuminate, long petiolate, 3½ ft. long, 1¾ in. broad,

Scapes tall, base not seen; racemes 1 ft. long, many-flowered. Bracts ovate or ovate-oblong, acuminate, $\frac{3}{4}$–$1\frac{1}{4}$ in. long. Pedicels 1–$1\frac{1}{2}$ in. long. Sepals elliptic-lanceolate or oblong-lanceolate, acute or shortly acuminate, 10–12 lin. long; lateral wholly adnate to the foot of the column. Petals suborbicular, minutely apiculate, 12–13 lin. long, pale lilac. Lip trilobed, $1\frac{1}{4}$ in. long, purple; side lobes broadly rounded; front lobe suborbicular-ovate, subobtuse, a little undulate; disc with 3 tall, crenulate, narrow lamellæ behind, and 5 in front, all the nerves of the lip slightly thickened; spur broadly conical at the base, narrow and acute above, 4 lin. long. Column clavate, 6–7 lin. long; foot half as long as the column.—Durand & Schinz, Conspect. Fl. Afr. v. 30, in part. *Eulophia porphyroglossa*, Bolus in Journ. Linn. Soc. xxv. 185, in part.

Nile Land. British East Africa: Niamniam; near the Hoo River, *Schweinfurth*, 2863!

South Central. Congo Free State: Monbuttu; near Munsa, *Schweinfurth*, ser. ii. 22!

Bolus reduces *L. Sandersoni*, Reichb. f. to this species, but it is certainly different.

37. **L. Sandersoni,** *Reichb. f. Otia Bot. Hamb.* i. 62 (*not Harv.*). Rhizome stout. Leaves long petiolate, lanceolate, acuminate, $1\frac{1}{2}$–$2\frac{1}{2}$ ft. long, 2–4 in. broad; petioles 1–$1\frac{1}{2}$ ft. long. Scapes 4–7 ft. high, stout, with a few sheaths below; racemes 9–12 in. long, many-flowered. Bracts ovate-lanceolate, acuminate, $\frac{3}{4}$–$1\frac{1}{4}$ in. long. Sepals oblong-lanceolate, acute or subacuminate, 10–12 lin. long, green. Petals ovate-orbicular, 1–$1\frac{1}{4}$ in. long, white. Lip trilobed, 1–$1\frac{1}{4}$ in. long; side lobes semiorbicular; front lobe ovate, obtuse; disc with 3 smooth keels below, and 3–5 taller crested ones on the base of the front lobe; spur conical, $1\frac{1}{2}$ lin. long. Column clavate, 8 lin. long.—Gard. Chron. 1885, xxiv. 17 (*Saundersonii* by error); Bot. Mag. t. 6858.

Mozamb. Dist. British Central Africa: Shire Highlands, in very wet places only, *Buchanan*, 300!

Also found in Natal.

38. **L. roseus,** *Lindl. in Bot. Reg.* 1843, *Misc.* 25; 1844, *t.* 12. Rhizome stout. Leaves lanceolate or elongate-lanceolate, acuminate, long petiolate, 2–3 ft. long, 1–$2\frac{3}{4}$ in. broad. Scapes 4–7 ft. high, with several sheaths; racemes 6–13 in. long, many-flowered, often somewhat dense. Bracts ovate or ovate-oblong, acute or subacute, 5–14 lin. long. Pedicels 1–$1\frac{1}{4}$ in. long. Flowers with rose-coloured petals and lip and dark brownish-purple sepals. Sepals elliptic-lanceolate, acute, narrowed at the base, 7–9 lin. long. Petals broadly elliptical or suborbicular-elliptical, 8–10 lin. long. Lip trilobed, 10–11 lin. long; side lobes broadly rounded; front lobe quadrate-ovate, obtuse; disc with 3 crenulate keels about the middle; spur conical, narrowed and often somewhat curved at the apex, 5–6 lin. long. Column clavate, $\frac{1}{2}$ in. long.—Lindl. in. Journ. Linn. Soc. vi. 133. *Dendrobium roseum*, Sw. in Schrad. Neues Journ. i. 97; Pers. Syn. Pl. ii. 523.

Upper Guinea. Sierra Leone: Samu, *Scott-Elliot*, 4297! On the way to

Port Lokko, *Scott-Elliott*, 5744! near Tawia, *Scott-Elliot*, 4472! and without precise locality, *Afzelius!* cultivated specimens, *Rucker!* Lagos: in a mangrove swamp, *Moloney! Millen*, 170! 171! Oye and Ado River, in damp situations, *Millen*, 99! Western Lagos, *Rowland!* Niger Territory: without locality, *Barter*, 80! Nupe; margin of a swampy ravine, *Barter*, 1481! side of a rivulet near Sare, *Barter*, 3429! Cameroons: Efulen, *Bates*, 452!

39. **L. Ephippilum,** *Reichb. f. in Flora*, 1882, 533. Sepals oblong-ligulate, acute. Petals oval-elliptical, large. Lip trilobed; side lobes obtuse-angled; front lobe oblong, subobtuse, undulate; disc with a pair of semicircular calli, with a keel between, and 3 dwarf thickened keels extending nearly to the apex; spur conical, rather short, retrorse.

Western Tropical Africa. Without locality or name of collector.

Only known to me from the original imperfect description, but said to be allied to *L. roseus*, Lindl.

40. **L. Alexandri,** *Reichb. f. in Flora*, 1882, 532. Lip broadly trilobed at the middle, undulate; disc with a dwarf callus in front of the spur, and 3 high, undulate keels extending nearly to the apex, the lateral ones 2-armed in front; spur conical, acute, curved, retrorse. Anther apiculate, bidentate.—Kränzl. in Engl. Jahrb. vii. 440.

Lower Guinea. Lower Congo: in the mouth of the river, near Shark Point, *Naumann*, 159. Angola: Malange, *Mechow*, 366.

Only known to me from the original very imperfect description, but said to be allied to *L. roseus*, Lindl.

41. **L. Nyasæ,** *Rolfe.* Scapes tall, base not seen; racemes 1 ft. long, many-flowered. Bracts ovate or ovate-oblong, 9–10 lin. long. Pedicels 10–12 lin. long. Sepals ovate, subobtuse, 6 lin. or more long. Petals suborbicular or obovate-orbicular, retuse, 12–13 lin. long. Lip obscurely trilobed, broadly suborbicular-ovate, obtuse, 13–14 lin. long; disc with 5 very high, narrow, slightly crenulate lamellæ, two of which extend behind almost into the spur, there becoming taller and almost semicircular; spur broadly conical, 4–5 lin. long, with a narrow apex, foot well developed. Column clavate, 7–8 lin. long.

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan*, 1066!

The specimen is in poor condition.

42. **L. macranthus,** *Lindl. Gen. & Sp. Orch.* 191. Racemes 9–12 in. long, many-flowered; base of scape not seen. Bracts ovate-oblong or obovate-oblong, obtuse or apiculate, concave, $\frac{3}{4}$–1 in. long. Pedicels $1\frac{1}{4}$ in. long. Sepals oblong-lanceolate, subacute, 7–8 lin. long. Petals broadly elliptical, 12–14 lin. long. Lip trilobed, 1–$1\frac{1}{4}$ in. long; side lobes broadly rounded; front lobe quadrate-suborbicular, obtuse or apiculate, undulate; disc with 3 high, narrow, crenulate keels about the middle; spur 5–6 lin. long, with a broadly conical, obtuse base, and a narrowed, attenuate, acute apex. Column clavate, 6 lin. long.

Upper Guinea. Niger Delta: Bonny, *Shepherd*, 6!

43. **L. elatus,** *Rolfe.* Rhizome stout. Leaves long petiolate, narrowly lanceolate, acuminate, 2–3 ft. long, 1½–2½ in. broad. Scapes 4–8 ft. high, with numerous sheaths below; racemes 9–12 in. long, many-flowered. Bracts obovate-oblong or elliptic-oblong, obtuse or apiculate, concave, ¾–1 in. long. Flowers pink or purple. Sepals oblong or obovate-oblong, apiculate, 9–11 lin. long. Petals suborbicular-elliptical, 1–1¼ in. long. Lip trilobed, 1–1¼ lin. long; side lobes broadly rounded; front lobe broadly elliptic-oblong or obovate, obtuse; disc with 3 slender, thickened keels. Column clavate, 8 lin. long. Capsule broadly elliptical, 1¾ in. long.

Upper Guinea. Cameroons: Batanga; near Lobe village, in damp grassy places, *Bates*, 61! Cameroon country, *King!*

Lower Guinea. Gaboon: Gaboon River, *Mann*, 1039! Munda; Sibange Farm, in swamps, *Soyaux*, 39! Angola: Benguela, *Monteiro!* Congo, *Smith!*

Near *L. giganteus*, Welw., but a dwarfer plant, with narrower leaves and smaller bracts and flowers. The plant cited by Kränzlin as *L. giganteus*, Reichb. f. (Mitth. Deutsch. Schutzgeb. ii. 1889, 156) from Batanga, *Braun*, 23, probably belongs here.

44. **L. giganteus,** *Welw. ex Reichb. f. in Flora*, 1865, 187. Rhizome stout. Leaves elongate, lanceolate, acuminate, long petiolate, 3–4 ft. long, 3–4 in. broad. Scapes 8–16 ft. high, with numerous sheaths below; racemes 1–1½ ft. long, 20–30-flowered. Bracts oblong or obovate-oblong, obtuse or apiculate, concave, ¾–1¾ in. long. Pedicels 1¼–2 in. long. Flowers light purple, with yellow keels to the lip. Sepals oblong or obovate-oblong, obtuse, and sometimes incurved and concave, 9–10 lin. long, light green. Petals broadly elliptic-oblong, obtuse or apiculate, 1¼–1½ in. long, light purple. Lip trilobed, 1¼–1½ in. long, light purple; side lobes broadly rounded; front lobe quadrate-suborbicular, obtuse or emarginate; disc with 3 somewhat thickened keels in the middle; spur broadly conical, 5–6 lin. long, somewhat narrowed and subacute at the apex.—Reichb. f. in Gard. Chron. 1888, iii. 616, 617, fig. 83; iv. 353; Ill. Hort. 1888, 49, t. 53; Will. Orch. Alb. x. t. 457; Veitch, Man. Orch. ix. 3. *Eulophia gigantea*, N. E. Br. in Kew Bulletin, 1889, 90.

Lower Guinea. Angola: Golungo Alto; in swamps by the Cuango rivulet, and other parts of the province of Camilungo, widely diffused over the region, 1000–2400 ft., *Welwitsch*, 673! Congo: Ponto da Lenha, near the mouth of the Congo River, on river banks, *Monteiro!*

45. **L. Welwitschii,** *Reichb. f. in Flora*, 1865, 188. Leaves lanceolate, acute, long petiolate, 2–3 ft. long, about 1¼ in. broad. Scapes 4–6 ft. high, stout; racemes 1 ft. or more long, many-flowered. Bracts broadly ovate or ovate-oblong, subobtuse, 8–10 lin. long. Pedicels 12–15 lin. long. Sepals oblong or obovate-oblong, subacute, 9–10 lin. long. Petals broadly elliptical or suborbicular-elliptical, 13–14 lin. long. Lip trilobed, 18–19 lin. long; side lobes broadly rounded, crenulate at the apex; front lobe broadly oblong, subobtuse, crenulate; disc with 3 deep, narrow, crenulate lamellæ in the middle, the central

one being shorter than the others; spur conical, with a broad base, 5–6 lin. long. Column clavate, stout, 8–9 lin. long.

Lower Guinea. Angola; Huilla; Monino, sparsely diffused in wooded meadows, *Welwitsch*, 710!

46. **L. Schweinfurthii,** *Reichb. f. Otia Bot. Hamb.* i. 60. Leaves elongate-lanceolate, acute, 1½ ft. or more long. Scapes tall; racemes 1 ft. long, many-flowered. Bracts ovate-oblong, obtuse, ¾–1½ in. long. Pedicels ¾–1 in. long. Sepals ovate-oblong, obtuse, 12–13 lin. long. Petals suborbicular, 13–14 lin. long. Lip entire or obscurely trilobed, suborbicular, undulate, 12–13 lin. long; disc with 5 elevated, crenulate lamellæ in front and 3 behind, the outer ones being tall and nearly semicircular; spur conical, 4 lin. long, with an acute, curved apex. Column clavate, 6–7 lin. long.

Nile Land. British East Africa: Niamniam; near Fahaui's Seriba, *Schweinfurth*, 3776!

47. **L. Elliotii,** *Rendle in Journ. Bot.* 1895, 169. Scapes about 5 ft. high, very stout, 6–7 lin. diam., with numerous sheaths; racemes 4–6 in. long, many-flowered. Bracts broadly ovate, acute or subobtuse, ¾–1¼ in. long. Pedicels ¾ in. long. Sepals broadly subspathulate-oblong or elliptic-oblong, apiculate, 8–10 lin. long. Petals broadly elliptical or suborbicular, 10–11 lin. long. Lip trilobed, 12–15 lin. long; side lobes broadly rounded; front lobe broadly oblong or subquadrate, obtuse, crisped-undulate; disc with 3 strong, narrow, elevated, crisped-undulate lamellæ, the middle one smaller than the lateral; spur broadly conical, obtuse, 3 lin. long. Column clavate, 4–5 lin. long; foot half as long as the column.

Nile Land. British East Africa: Ruwenzori; Wimi River, in marshy places, 7000 ft., *Scott-Elliott*, 7924!

48. **L. congoensis,** *Rolfe.* Racemes 4 in. or more long, many-flowered. Bracts lanceolate, acuminate, 4–6 lin. long. Pedicels 7–8 lin. long. Sepals broadly elliptical, apiculate, 6–7 lin. long. Petals suborbicular, 6–7 lin. long. Lip trilobed, 6–7 lin. long; side lobes elliptic-oblong, obtuse, divaricate; front lobe very broadly obovate and somewhat dilated at the sides, with an emarginate apex; disc with a pair of erect, narrow, semicircular keels in front of the spur, and about 5 verrucose nerves on the middle of the front lobe; spur oblong, curved, somewhat narrowed above, 5 lin. long. Column clavate, 4 lin. long.

Lower Guinea? Upper Congo, *Dybowski!*

49. **L. Friderici,** *Reichb. f. in Flora*, 1867, 113. Scapes 2 ft. high, rather slender, with several apiculate, nerved sheaths; racemes elongate, lax-flowered. Bracts linear-setaceous, deflexed, 3–4 lin. long. Flowers as long as the leaves, subcoriaceous, of two shades of yellow, nodding. Sepals elliptic-oblong, retuse; dorsal obovate-oblong, 4–5 lin. long. Petals suborbicular, broader than long, retuse, 4–5 lin. long.

Lip trilobed, 4 lin. long; side lobes short, broadly rounded; front lobe rhomboidal, acute, abruptly reflexed at the sides, simply saccate at the base, and with a transverse membrane at the base of the front lobe. Column stout, $2\frac{1}{2}$ lin. long.

Lower Guinea. Angola: Ambaca district; near Zamba, 3000 ft., *Welwitsch*, 676!

Reichenbach describes the front lobe of the lip as obliquely infolded. In this he appears to be wrong, judging by the meagre material at the British Museum.

50. **L. Oatesii,** *Rolfe in Oates, Matabele Land, ed.* ii. 409. Racemes 10 in. long, many-flowered. Bracts broadly ovate or ovate-oblong, obtuse, $2\frac{1}{2}$–4 lin. long. Pedicels 8–10 lin. long. Sepals suborbicular or obovate-elliptical, apiculate, 7–8 lin. long. Petals orbicular, 8–9 lin. long. Lip trilobed, 7–8 lin. long; side lobes obovate-elliptical, obtuse; front lobe obovate-orbicular; disc with a few verrucose nerves in front of the spur; spur conical-saccate, obtuse, $1\frac{1}{2}$ lin. long. Column stout, 4 lin. long.

Mozamb. Dist. British Central Africa: Matabele Land, *Oates!*

51. **L. malanganus,** *Reichb. f. in Flora*, 1882, 533. Leaves linear-lanceolate, with a very long acumination. Racemes lax. Flowers of the size of those of *L. Krebsii*, Reichb. f., membranous. Sepals ligulate, acute. Petals elliptical. Lip elongate, trilobed; side lobes obtuse-angled; front lobe extending forwards, ligulate, obtuse; spur conical, acute, slender, much shorter than the pedicel.

Lower Guinea. Angola: Malange, *Mechow*, 290, 365.

Only known to me from the original very imperfect description, in which it is said to have no affinity with any other species. Durand & Schinz (Conspect. Fl. Afr. v. 29) confound this with the quite different *L. malangensis*, Reichb. f.

52. **L. paivæanus,** *Reichb. f. in Flora*, 1865, 187. Scape 2 ft. or more high; base not seen; racemes 9–12 in. long, many-flowered. Bracts oblong-lanceolate or ovate-lanceolate; acuminate, 6–9 lin. long. Pedicels 8–10 lin. long. Sepals elliptic-oblong or oblong, acute, 7–9 lin. long. Petals orbicular-ovate, apiculate or subobtuse, 7–8 lin. long. Lip trilobed, 6–7 lin. long; side lobes broadly oblong or suborbicular-oblong, obtuse; front lobe broadly elliptical or ovate-elliptical, obtuse, convex with reflexed sides; disc with 3 obscurely crenulate keels; spur conical-oblong, obtuse, 3 lin. long. Column stout, 4 lin. long.

Lower Guinea. Angola: Huilla, frequent in sandy thickets, *Welwitsch*, 731!

Var. *stenophyllus*, Reichb. f. in Flora, 1867, 105. Leaves linear-lanceolate, acute, 1–$1\frac{1}{4}$ in. long. Scape $2\frac{1}{2}$ ft. long, with several bracts below; racemes 1 ft. long, many-flowered. Bracts 4–9 lin. long, linear lanceolate, long acuminate. Pedicels 7–8 lin. long. Sepals oblong-lanceolate, acuminate, 6 lin. long. Petals broadly ovate, 5 lin. long. Lip trilobed, 5 lin. long; side lobes oblong, obtuse, $3\frac{1}{2}$–4 lin. long; front lobe broadly ovate, subobtuse, with strongly reflexed sides; disc with about 3 slightly thickened nerves; spur obtuse, $1\frac{1}{2}$ lin. long, slightly curved. Column clavate, $2\frac{1}{2}$ lin. long.

Lower Guinea. Angola: Pungo Adongo; at the base of Pedra Pungo, in stony thickets, rare, *Welwitsch*, 690!

Very distinct from the type, having more acuminate bracts and much smaller flowers.

53. **L. renschianus,** *Reichb. f. Otia Bot. Hamb.* ii. 75. Leaves cuneate-oblong, acuminate, about 15 in. long, $2\frac{1}{4}$ in. broad. Scapes elongate, racemose, with a single basal branch, lax-flowered. Bracts triangular, acuminate or acute, $\frac{1}{3}$–$\frac{1}{2}$ as long as the pedicel. Sepals cuneate-ligulate, acute. Petals rhomboid, acute, obtuse-angled, as long as the sepals but much broader. Lip trilobed: side lobes ligulate, obtuse, suberect; front lobe subrhomboid-ligulate, acute, with an obtuse angle on either side near the apex; disc with a thickened median keel; spur slender, not half as long as the front lobe.

Lower Guinea. Angola: Pungo Adongo, *Mechow,* 138.

Only known to me from the original description, but said to be near *L. paivæanus,* Reichb. f., from which it differs in its broader leaves, narrower bracts, and in the shape and narrower side lobes of the lip.

54. **L. papilionaceus,** *Rendle in Journ. Bot.* 1895, 170. Scapes $2\frac{1}{2}$ ft. high, with a few sheaths below; racemes 9 in. long, lax. Bracts ovate-lanceolate, acute or acuminate, 4–10 lin. long. Pedicels 7–8 lin. long. Sepals oblong-lanceolate, acute, 7–8 lin. long. Petals orbicular-ovate, apiculate, 7–8 lin. long. Lip trilobed, 6–7 lin. long; side lobes broadly oblong, obtuse; front lobe orbicular-ovate, apiculate, convex, with reflexed sides; disc with 3 slightly thickened keels; spur conical, 3–4 lin. long. Column stout, 3 lin. long.

Mozamb. Dist. British Central Africa: Stevenson Road, 4000–5000 ft., *Scott-Elliot,* 8268!

55. **L. Carsoni,** *Rolfe.* Leaves elongate-lanceolate, acuminate, 9–12 in. long, $\frac{3}{4}$–1 in. broad. Scapes 3 ft. high, with a few sheaths below; racemes 1–$1\frac{1}{4}$ ft. long, laxly many-flowered. Bracts lanceolate or oblong-lanceolate, acute, 3–5 lin. long. Pedicels 6–7 lin. long. Sepals elliptic-oblong or oblong-lanceolate, acute, 6 lin. long. Petals broadly suborbicular-ovate, 7 lin. long. Lip trilobed, 5–6 lin. long; side lobes oblong, obtuse; front lobe suborbicular, apiculate, with deflexed sides; disc with a central, scarcely thickened keel, obscurely crenulate at the base; spur oblong, obtuse, stout, 3 lin. long. Column clavate, stout, 4 lin. long.

Mozamb. Dist. British Central Africa: Fwambo, south of Lake Tanganyika, *Carson,* 123!

56. **L. Grantii,** *Reichb. f. in Trans. Linn. Soc.* xxix. 153. Scapes stout, 2–3 ft. high, with several sheaths below; racemes 6–12 in. long, many-flowered. Bracts ovate or ovate-lanceolate, acute or acuminate, 4–7 lin. long. Pedicels 5–7 lin. long. Flowers yellow. Sepals broadly elliptical or ovate-elliptical, apiculate, 6–7 lin. long. Petals orbicular or orbicular-ovate, obtuse, 6–7 lin. long. Lip trilobed, 5–6 lin. long; side lobes orbicular-oblong; front lobe orbicular-ovate, apiculate, convex

with reflexed sides; disc with 3 fleshy keels; spur conical-oblong, obtuse, slightly curved, 3 lin. long. Column stout, 3–4 lin. long.

Mozamb. Dist. German East Africa: Usagara; Robeho Mountains, near water, 4700 ft., *Grant!*

57. **L. Erythrææ,** *Rolfe.* Rhizome stout; pseudobulbs oblong, clothed with loose membranous leaf-sheaths, 3–4 in. long. Leaves lanceolate or elongate-lanceolate, acuminate, $\frac{3}{4}$–$1\frac{1}{4}$ ft. long, $\frac{3}{4}$–$1\frac{1}{4}$ in. broad. Scapes 3 ft. long, stout, with a few sheaths below; racemes 1 ft. long, many-flowered. Bracts oblong-lanceolate, acute, 4–8 lin. long. Pedicels 7–9 lin .long. Sepals elliptic-oblong, obtuse, 6–7 lin. long, dusky grey-green. Petals ovate-orbicular, obtuse, 7–8 lin. long, bright yellow. Lip pandurate-oblong, 7–8 lin. long, yellow, striped with purple near the base; side lobes auriculate, rounded; front lobe broadly elliptical, obtuse; disc with 3 crenulate keels; spur conical, obtuse, 2 lin. long. Column stout, $2\frac{1}{2}$–3 lin. long.—*Lissochilus graniticus*, Schweinf. in Bull. Herb. Boiss. ii. App. ii. 89, 112 (not Reichb. f.).

Nile Land. Eritrea: Kohaito Plateau, 8500–9000 ft., *Schweinfurth*, 168! Ginda Valley, near Filogobai, 4600 ft., *Schweinfurth*, 517! Saganeiti, 7200–7500 ft., *Schweinfurth*, 1833! Acrur, 7100 ft., *Schweinfurth*, 2205!

58. **L. Krebsii,** *Reichb. f. in Linnæa*, xx. 685. Rhizome stout. Leaves lanceolate, acuminate, 1–$1\frac{1}{4}$ ft. long, $1\frac{1}{4}$–2 in. broad, attenuate at the base into a petiole. Scapes 2–4 ft. high, stout, with several sheaths below; racemes 9–12 in. long, laxly many-flowered. Bracts ovate, acute, 7–9 lin. long. Sepals elliptic-oblong, subacute, 6–7 lin. long, brown. Petals suborbicular, 6–7 lin. long, yellow. Lip trilobed, 6–7 lin. long; side lobes divaricate, broadly oblong, obtuse, red-purple, slightly falcate; front lobe broadly elliptical, obtuse, deflexed at the sides, yellow; disc with a thickened, but very obscurely verrucose keel; spur oblong, slightly curved, 2 lin. long. Column clavate, stout, 3 lin. long.—Adlam in Gard. Chron. 1886, xxvi. 58. *L. Krebsii var. purpurata*, Ridl. in Gard. Chron. 1885, xxiv. 102; Will. Orch. Alb. vi. t. 259. *Eulophia Krebsii*, Bolus in Journ. Linn. Soc. xxv. 185. *Lissochilus Graefei*, Kränzl. in Gard. Chron. 1892, xi. 749; Reichb. f. Xen. Orch. iii. 125, t. 272.

Mozamb. Dist. British Central Africa: Mount Mlanje, 7000 ft., *McClounie!* Portuguese East Africa: Morambala Mountains, *Waller!*

Also in South Africa.

59. **L. Rueppelii,** *Reichb. f. in Linnæa*, xx. 686 (*in note*); xxii. 865. Rhizome creeping, stout, with pseudobulbous, oblong stem, $3\frac{1}{2}$ in. long. Leaves lanceolate or linear-lanceolate, acuminate, $\frac{1}{2}$–$1\frac{1}{4}$ ft. long, $1\frac{1}{4}$–2 in. broad. Scapes 1–$1\frac{1}{2}$ ft. long, with several short sheaths below; racemes 6–8 in. long, loosely many-flowered. Bracts oblong or ovate-oblong, obtuse or apiculate. Pedicels 5–7 lin. long. Sepals elliptic-oblong or ovate-oblong, obtuse, 5–7 lin. long. Petals ovate-orbicular, obtuse or apiculate, 6–7 lin. long. Lip trilobed, 5–7 lin. long; side lobes suborbicular-oblong, obtuse; front lobe suborbicular, obtuse; disc with 3

fleshy, obscurely crenulate keels; spur conical, obtuse, $1\frac{1}{2}$–2 lin. long. Column clavate, 4–5 lin. long.—Walp. Ann. iii. 553. *Hypodematium abyssinicum*, A. Rich. Tent. Fl. Abyss. ii. 286, t. 83. *Lissochilus abyssinicus*, Durand & Schinz, Conspect. Fl. Afr. v. 27.

Nile Land. Abyssinia: between Halei and Temben, *Ruppel*. Province of Wodjerat, *Petit*. Without locality, *Roth*, 44!

60. **L. shirensis,** *Rendle in Journ. Bot.* 1895, 171. Scapes $3\frac{1}{2}$–4 ft. high, with several sheaths below; racemes 1 ft. long, laxly many-flowered. Bracts ovate or ovate-oblong, acute, 4–8 lin. long. Sepals 5–7 lin. long, elliptic-oblong, apiculate. Petals orbicular-ovate, apiculate, 5–6 lin. long. Lip trilobed, 5–6 lin. long; side lobes auriculate, roundish-oblong, divaricate; front lobe suborbicular-ovate, obtuse, convex with reflexed sides; disc with obscurely thickened nerves; spur conical, obtuse, $1\frac{1}{2}$–2 lin. long. Column stout, $2\frac{1}{2}$–3 lin. long.

Mozamb. Dist. British Central Africa: Shire Highlands, Mount Sochi, *Scott-Elliot*, 8613!

61. **L. ruwenzoriensis,** *Rendle in Journ. Bot.* 1895, 170. Leaves linear-lanceolate, acute, attenuate below, $1\frac{3}{4}$–2 ft. long, 1–$1\frac{1}{2}$ in. broad. Scapes 3 ft. high, with a few sheaths below, sometimes branched above; racemes 9–12 in. long, many-flowered. Bracts lanceolate or oblong-lanceolate, acute, 6–9 lin. long. Pedicels 6–8 lin. long. Sepals broadly elliptic-oblong or suborbicular-oblong, obtuse or apiculate, 5 lin. long. Petals suborbicular or orbicular-ovate, obtuse, 6–7 lin. long. Lip trilobed, 7–8 lin. long; side lobes broadly elliptic-oblong, obtuse; front lobe obovate or suborbicular, apiculate; disc with 3 smooth keels; spur saccate-conical, 2–$2\frac{1}{2}$ lin. long. Column stout, $2\frac{1}{2}$–3 lin. long.

Nile Land. British East Africa: Ruwenzori; eastern side 6000 ft., common in short bush, *Scott-Elliot*, 7871! Kivata, 6000–7000 ft., on sunny hills, *Scott-Elliot*, 7735!

62. **L. oliverianus,** *Reichb. f. in Trans. Linn. Soc.* xxix. 154. Leaves developed after the flowering time. Scapes "5 ft. high"; racemes $1\frac{1}{2}$–2 ft. long, laxly many-flowered. Bracts lanceolate, acute, 5–7 lin. long. Pedicels 7–8 lin. long. Sepals oblong-lanceolate, acute, 6–7 lin. long, green, spotted with brown. Petals orbicular-ovate, apiculate, 5–6 lin. long, yellow. Lip trilobed, 5 lin. long, yellow; side lobes oblong, obtuse, divaricate, 2 lin. long; front lobe suborbicular, obtuse or apiculate, convex with reflexed sides; disc with 3 crenulate, thickened nerves in the centre; spur conical, 1 lin. long. Column stout, $2\frac{1}{2}$–3 lin. long.

Mozamb. Dist. German East Africa: Karagwe, *Grant*, 463!

63. **L. Kirkii,** *Rolfe*. Leaves elongate-linear, 9 in. or more long. Bracts lanceolate, acute, $\frac{3}{4}$ in. long. Sepals oblong, obtuse, 5–6 lin. long. Petals ovate-suborbicular, 5–6 lin. long. Lip trilobed, 4–5 lin. long; side lobes broadly oblong, obtuse; front lobe broadly ovate-orbicular, obtuse, with deflexed sides; disc with a slightly thickened,

and obscurely verrucose keel at the base; spur conical-oblong, obtuse, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. long. Column stout, clavate, $2\frac{1}{2}$ lin. long.

Mozamb. Dist. Zanzibar, cultivated specimen!

Flowered at Kew in 1882. The dried specimen is imperfect.

64. **L. micranthus,** *Kränzl. in Engl. Jahrb.* xvii. 53. Plant very slender. Leaves linear, 3-nerved, much attenuate at the base and apex. Racemes simple, slender, as long as or shorter than the leaves, with a few acuminate sheaths below. Bracts linear, acuminate, shorter than the ovary. Flowers $\frac{3}{4}$ in. diam. Sepals obovate-oblong, rounded and apiculate at the apex; lateral shortly unguiculate. Petals rhomboid-oblong, very obtuse. Lip trilobed; side lobes erect, triangular, with a rounded apex; front lobe suborbicular, apiculate, distinctly plicate, without calli; spur short, conical.

Nile Land. British East Africa: Noro on Mount Kenia, *Hohnel*, 78.

Only known to me from the original description, but said to be near *L. parviflorus*, Lindl.

65. **L. Stuhlmanni,** *Kränzl. in Engl. Jahrb.* xix. 249. Pseudobulb oblong-cylindrical, with 3 or 4 internodes. Leaves, of which 2 are present at flowering time, linear-lanceolate, acuminate, 20–24 in. long, or perhaps even longer after flowering. Scapes strong, 5 ft. high, with several sheaths below; racemes laxly many-flowered. Bracts oblong, acute, as long as the pedicels. Flowers $\frac{3}{4}$ in. diam. Sepals oblong, dark green with red-brown nerves; dorsal acute; lateral more obtuse. Petals suborbicular, very obtuse, apiculate, slightly longer than the sepals, yellow. Lip trilobed; side lobes oblong, acute; front lobe rounded at the apex, pandurate, compressed, with a central, oblong callus; spur short, sulcate and reflexed at the apex, ascending. Column broad, dilated above.

Mozamb. Dist. German East Africa: Karagwe; Bukoba, on Lake Victoria Nyanza, *Stuhlmann*, 3220.

Only known to me from the original description.

66. **L. calopterus,** *Reichb. f. in Bonplandia*, iii. 218. Rhizome tuberous. Leaves elongate-linear or lanceolate-linear, acute, 6–18 in. long, 6–13 lin. broad. Scapes $2\frac{1}{2}$–4 ft. high, with a few short sheaths below; racemes 8–12 in. long, laxly many-flowered. Bracts linear-lanceolate, acute, 3–6 lin. long. Pedicels 8–10 lin. long. Flowers yellow. Sepals ovate-oblong, acute, $3\frac{1}{2}$–4 lin. long, adnate at the base to the foot of the column. Petals ovate, obtuse, or subobtuse, 6–8 lin. long. Lip pandurate-oblong, 6 lin. long; side lobes auriculate, rounded; front lobe elliptic-oblong, obtuse, convex with reflexed sides; disc with about 9 thickened keels; spur conical, 2 lin. long. Column stout, $2\frac{1}{2}$–3 lin. long; foot half as long as the column.—Reichb. f. in Walp. Ann. vi. 670; Flora, 1865, 187; Otia Bot. Hamb. ii. 76; Klotzsch in Peters' Mossamb. Bot. 513.

Lower Guinea. Angola: Loanda; near Cacuaco, *Welwitsch*, 652! Ambriz, in thickets, *Monteiro*, 2!

Mozamb. Dist. Zanzibar Island, *Hildebrandt*, 1044 of 1873 collection (ex *Reichenbach*). German East Africa: Bagamoyo, *Hildebrandt*, 1044B of 1874 collection. Portuguese East Africa: Lower Zambesi; Boror, *Peters*. Lower Shire, Gombra, *Scott!*

67. **L. Volkensii,** *Rolfe*. Pseudobulb stout. Leaves 5, tufted, elongate-linear or linear-lanceolate, subacute, attenuate below, 9–18 in. long, $\frac{3}{4}$–1 in. broad. Scapes 4–4$\frac{1}{2}$ ft. high, with several sheaths below; racemes 1 ft. long, laxly many-flowered. Bracts linear-lanceolate, acute, 3–5 lin. long. Pedicels 6 lin. long. Sepals ovate, apiculate, or subacuminate, 2$\frac{1}{2}$–3 lin. long. Petals broadly ovate, 6–7 lin. long. Lip pandurate-oblong, 6 lin. long; basal auricles roundish-oblong; front lobe broadly elliptic-oblong, obtuse; disc with 5–7 smooth keels; spur conical, obtuse, 1–1$\frac{1}{2}$ lin. long. Column clavate, 3 lin. long.—*L. Krebsii*, Kränzl. in Eng. Pfl. Ost-Afr. C. 156, in part (not Reichb. f.).

Mozamb. Dist. German East Africa: Kilimanjaro; Rahe at 2600 ft., *Volkens*, 2191!

68. **L. Taylori,** *Ridl. in Journ. Bot.* 1886, 293. Pseudobulb oblong, conical, 2$\frac{1}{2}$ in. long. Leaves linear, over 1 ft. long, $\frac{3}{4}$ in. broad. Scapes stout, 3 ft. high, with a few loose sheaths at the base. Bracts lanceolate, acuminate, $\frac{1}{2}$ in. long. Pedicels $\frac{3}{4}$ in. long. Sepals ovate-lanceolate, acuminate, 4 lin. long. Petals ovate, obtuse, 7–8 lin. long. Lip trilobed, pandurate-oblong, 4–5 lin. long; side lobes short, rounded; front lobe oblong-elliptical, obtuse, slightly crisped, 3 lin. long; disc with about 8 slightly elevated keels; spur very short, conical. Column stout, 2$\frac{1}{2}$ lin. long.

Nile Land. British East Africa: Rabai Hills at Jomvu, near Mombasa, *Taylor!*

Mozamb. Dist. German East Africa: between Uyui and the coast, *Taylor!*

69. **L. graniticus,** *Reichb. f. Otia Bot. Hamb.* ii. 75. Rhizome stout. Leaves 5, tufted, elongate-linear, acute, 9–15 in. long, 3–4 lin. broad. Scapes 4 ft. high, with a few sheaths below; racemes 1 ft. long, laxly many-flowered. Bracts linear-lanceolate, acute, 3–4 lin. long. Pedicels 7–8 lin. long. Flowers yellow. Sepals ovate-oblong, apiculate or acuminate, 3–3$\frac{1}{2}$ lin. long. Petals broadly ovate, apiculate, 6–7 lin. long. Lip pandurate-oblong, 6 lin. long; side lobes rounded-oblong; front lobe suborbicular-elliptical, obtuse; disc with 5 obscurely crenulate keels; spur conical, obtuse, about 1 lin. long. Column stout, dilated above, 2$\frac{1}{2}$ lin. long.—Engl. Hochgeb. Fl. Trop. Afr. 187.

Nile Land. Eritrea: Habab, 6000 ft., *Hildebrandt*, 382!

70. **L. Mechowii,** *Reichb. f. Otia Bot. Hamb.* ii. 75. Leaves linear-ligulate, acuminate, chartaceous, 6–7 lin. broad. Scapes tall, with the flowers distantly racemose above. Bracts triangular, setaceous, very short. Flowers yellow. Sepals triangular, short. Petals oblong, "very obtusely acute," very large. Lip trilobed; side lobes short, erect, united to the column; front lobe, oblong, acute, convex with

reflexed sides; disc with 9–11 granulate keels; spur slenderly conical, a little shorter than the front lobe of the lip.

Lower Guinea. Angola: Malange, *Mechow*, 264.

Only known to me from the original description.

71. **L. orthoplectrus,** *Reichb. f. in Otia Bot. Hamb.* i. 63. Scapes elongate, 2 ft. high, with a few distant sheaths; racemes lax, many-flowered. Bracts triangular, setaceous, 5 lin. long, much exceeded by the pedicellate ovary. Flowers brown, striped with purple. Sepals oblong-triangular, apiculate, scarcely 5 lin. long. Petals elliptical, acute, 6–7 lin. long. Lip trilobed; side lobes semiovate; front lobe ligulate, subacute; disc with 5 thick crenulate lamellæ; spur conical, straight.

Nile Land. Niamniam; north of the Uzze River, *Schweinfurth*, 3270.

Only known to me from the original description.

72. **L. Wakefieldii,** *Reichb. f. & S. Moore in Journ. Bot.* 1878, 136. Rhizome stout. Leaves elongate-linear, acute or acuminate, 6–9 in. or more long. Scapes $2\frac{1}{2}$–4 ft. long, with several sheaths below; racemes 6–11 in. long, laxly many-flowered. Bracts ovate-lanceolate, acuminate, 3–7 lin. long. Pedicels 7–10 lin. long. Sepals ovate-oblong, apiculate or shortly acuminate, 3–5 lin. long, green. Petals broadly ovate, apiculate, 9–10 lin. long, bright yellow. Lip pandurate-oblong, obtuse, 9–10 lin. long; basal auricles rounded, adnate to the base of the column; front lobe convex; disc with 3–7 bright yellow keels, stout and crenulate below, narrower and entire above; spur conical, $1\frac{1}{2}$–3 lin. long. Column stout, $2\frac{1}{2}$–5 lin. long; foot very short.—Reichb. f. Otia Bot. Hamb. ii. 76; *Eulophia dispersa*, N. E. Brown in Kew Bulletin, 1892, 127; *Lissochilus dispersus*, Rolfe in Gard. Chron. 1893, xiii. 684.

Nile Land. British East Africa: Mombasa, *Hildebrandt*, 1044 and 1044c of 1876 and 1877 collections, 1951b (ex *Reichenbach*); Teita Dist., Buityuma, *Hildebrandt* (ex *Reichenbach*); Rabai Hills, near Mombasa, *Taylor!* Nyika country, near Mombasa, found in many districts, *Wakefield!* Rabai Hills at Jomvu, *Wakefield!* Ribe, *Wakefield!*

Mozamb. Dist. Zanzibar, *Kirk!* British Central Africa: Mlanje, *Whyte!* Lake Nyasa, Livingstonia, cultivated specimens! Portuguese East Africa: Lower Zambesi, Shupanga, on grassy plains, *Kirk!* near Morambala, *Kirk!* Bechuanaland: banks of the Zuga River, near Lake Ngami, *McCabe!*

The above all appear to be forms of one variable species.

73. **L. brevisepalus,** *Rendle in Journ. Bot.* 1895, 195. Scapes 2–$2\frac{1}{2}$ ft. high, with a few short sheaths below; racemes about 6 in. long, laxly many-flowered. Bracts lanceolate, acute, $2\frac{1}{2}$–3 lin. long. Pedicels 7–8 lin. long. Sepals ovate-oblong, acute, or apiculate, 3 lin. long. Petals suborbicular, 6–7 lin. long. Lip pandurate, 6–7 lin. long; side lobes auriculate or rounded-oblong, somewhat adnate to the foot of the column; front lobe broadly elliptical or suborbicular-elliptical, apiculate,

convex with reflexed sides; disc with 7 thick, somewhat crenulate keels; spur broadly conical, 2–2½ lin. long. Column stout, 2 lin. long; foot well developed.

Mozamb. Dist. British Central Africa: Shire Highlands; Mount Sochi, *Scott-Elliot*, 8526! Ndurandi, *Scott-Elliot*, 8511!

74. **L. Rendlei,** *Rolfe.* Scapes 2–2½ ft. high, with several sheaths below; racemes 6–8 in. long, laxly many-flowered. Bracts lanceolate, acuminate, 5–6 lin. long. Pedicels 9–10 lin. long. Sepals ovate, shortly acuminate, 3–4 lin. long. Petals broadly ovate, suborbicular, obtuse or apiculate, 7–8 lin. long. Lip trilobed, 6–7 lin. long; side lobes broadly oblong, obtuse; front lobe elliptic-oblong, obtuse or apiculate, with reflexed sides; disc with about 5 thickened, obscurely verrucose keels down the centre; spur conical, obtuse, 1½ lin. long. Column clavate, stout, 2 lin. long.—*L. Wakefieldii*, Rendle in Journ. Bot. 1895, 170 (not Reichb. f. & S. Moore).

Mozamb. Dist. British Central Africa: Fwambo, S. of Lake Tanganyika, *Carson*, 90! Stevenson Road, 4000–5000 ft. ("from Mr. Carson") *Scott-Elliot*, 8266!

75. **L. aurantiacus,** *Reichb. f. in Flora*, 1865, 187. Rhizome stout. Leaves lanceolate-linear, acute, 9–12 in. long, 5–6 lin. broad. Scapes over 1 ft. high; base not seen; racemes 10-12 in. long, laxly many-flowered. Bracts oblong-lanceolate, acuminate, 3–6 lin. long. Pedicels 5–6 lin. long. Sepals ovate-oblong, acute or apiculate, 4–5 lin. long; lateral adnate to the foot of the column at the base. Petals broadly ovate-orbicular, minutely apiculate, 6–7 lin. long. Lip trilobed, 6–7 lin. long; side lobes auriculate, broadly oblong, obtuse; front lobe broadly elliptical or suborbicular-elliptical, obtuse or minutely apiculate, convex with reflexed sides; disc with slightly thickened, somewhat crenulate nerves; spur saccate, with a conical apex, 2½–3 lin. long. Column stout, 2½–3 lin. long; foot half as long as the column.

Lower Guinea. Angola: Pungo Adongo; near Cazella, on grassy rocks, *Welwitsch*, 691! Benguela, *Monteiro!*

76. **L. Holubii,** *Rolfe.* Racemes many-flowered, base not seen. Bracts subulate or linear-lanceolate, acute, 2 lin. long. Sepals ovate-oblong, apiculate, 3½–4 lin. long. Petals broadly orbicular-ovate, 7 lin. long. Lip trilobed, 6 lin. long; side lobes rounded-oblong, adnate to the base of the column; front lobe ovate-oblong, obtuse, very gibbous in front, with reflexed sides; disc slightly verrucose along the centre; spur conical, 2–2½ lin. long. Column stout, dilated above, 3 lin. long.

Mozamb. Dist. Northern Bechuanaland; Leshumo Valley, *Holub!*

77. **L. Smithii,** *Rolfe.* Scapes about 2 ft. high, with 3 or 4 loose sheaths below; racemes about 4 in. long, rather lax. Bracts linear-lanceolate, acuminate, 4–6 lin. long. Pedicels 9 lin. long. Sepals ovate-oblong, acuminate, 4 lin. long. Petals broadly ovate-orbicular, apiculate. Lip trilobed, 6 lin. long; side lobes ovate-oblong, obtuse,

adnate to the base of the column; front lobe ovate, acute, undulate, reflexed at the sides; disc gibbous, with 5 crested lamellæ, the 3 central ones being very tall, and the nerves on either side a little thickened; spur conical, 4 lin. long, with a somewhat curved, acute apex. Column clavate, dilated above, 4 lin. long.

Mozamb. Dist. German East Africa: Kilimanjaro, *Smith!*

78. **L. Johnstoni,** *Rolfe*. Leaves elongate-linear, acute, 4–6 in. or more high. Scapes 2–2½ ft. high, with several sheaths below; racemes 9–12 in. long, many-flowered. Bracts linear-lanceolate, acuminate, 3–5 lin. long. Sepals ovate-oblong, acute or acuminate, 4 lin. long. Petals broadly ovate-orbicular, apiculate, 6 lin. long. Lip trilobed, 4 lin. long; side lobes oblong, obtuse, adnate to the base of the column; front lobe ovate, acute, with reflexed sides; disc very gibbous, with 3 very high, smooth lamellæ; spur 3½–4 lin. long, with a broadly conical base, and a narrowed, much curved apex. Column broad, dilated above, 2 lin. long.

Nile Land. British East Africa: Kilimanjaro Expedition, 40–60 miles from the coast, *Johnston!*

79. **L. Thomsoni,** *Rolfe*. Scapes over 1 ft. high, base not seen; racemes about 4 in. long, few-flowered. Bracts ovate-lanceolate, acute, 5–6 lin. long. Pedicels 6 lin. long. Sepals ovate, acute, 4 lin. long. Petals broadly ovate-orbicular, apiculate, 7 lin. long. Lip trilobed, 5 lin. long; side lobes ovate, obtuse, partly adnate to the base of the column; front lobe ovate, subacute, with reflexed sides; disc convex, with about 5 dwarf, crenulate keels along the centre, and a few slightly thickened nerves on either side; spur conical, subobtuse, slightly curved, 2–2½ lin. long. Column stout, 3 lin. long.

Mozamb. Dist. British Central Africa: between Lake Nyasa and Lake Tanganyika, 6000–8000 ft., *Thomson!*

80. **L. monticolus,** *Rendle in Journ. Bot.* 1895, 172. Scapes slender, 2½–3 ft. high, with several sheaths below; racemes 4 in. long, rather lax. Bracts lanceolate, acute, 3–4 lin. long. Pedicels 5–6 lin. long. Sepals ovate, apiculate, 3–3½ lin. long, somewhat adnate to the foot of the column. Petals broadly suborbicular, 5–6 lin. long. Lip deeply trilobed; side lobes oblong, obtuse, adnate to the foot of the column on the inner side, 3 lin. long; front lobe broadly oblong, obtuse or apiculate, convex with reflexed sides, 3½ lin. long; disc with 3 prominent, obtuse keels in the middle; spur conical, narrowed at the apex, 4 lin. long. Column stout, 2½–3 lin. long; foot as long as or somewhat longer than the column.

Nile Land. British East Africa: Ruwenzori, eastern side, 5300 ft., on granite, *Scott-Elliot*, 7552!

81. **L. Kræenzlinii,** *Rolfe*. Scapes 2 ft. high, with about 3 tubular bracts below; racemes 5–6 in. long, laxly many-flowered.

Bracts lanceolate, acuminate, 4–5 lin. long. Pedicels 7–8 lin. long. Sepals ovate-oblong, apiculate or acuminate, 3 lin. long. Petals broadly ovate, apiculate, 6 lin. long. Lip trilobed, 6 lin. long; side lobes broadly rounded; front lobe ovate, acute, undulate, with reflexed sides; disc convex, with 5–7 crenulate keels; spur conical, slightly curved, obtuse, $3\frac{1}{2}$ lin. long. Column stout, dilated above, 3 lin. long.—*L. calopterus*, Kränzl. in Engl. Pfl. Ost-Afr. C. 156, in part (not Reichb. f.).

Mozamb. Dist. German East Africa: Kilimanjaro; Shira, 3200 ft., *Volkens*, 1617!

82. **L. milanjianus,** *Rendle in Trans. Linn. Soc.* ser. 2, iv. 46. Rhizome thickened and flattened, prostrate on the ground, composed of a series of swollen internodes, $1\frac{1}{2}$–$2\frac{1}{2}$ in. long, $\frac{3}{4}$–$1\frac{1}{4}$ in. broad, strung together in a chain. Leaves linear-oblong, 6 in. long, 4–6 lin. broad. Scapes 2–$2\frac{1}{2}$ ft. high, with several sheaths below; racemes 6–9 in. long, laxly many-flowered. Bracts lanceolate, acuminate, 3–6 lin. long. Pedicels 6–9 lin. long. Sepals lanceolate-oblong or ovate-lanceolate, acuminate, slightly carinate, 4–5 lin. long, purplish-brown with green base; lateral partly adnate to the lip and foot of the column. Petals broadly suborbicular, obtuse or minutely apiculate, 7–9 lin. long, bright yellow on the back, rosy carmine with darker veins on the face. Lip deeply trilobed, yellow with some dark nerves on the side lobes; side lobes broadly oblong, obtuse, 4 lin. long, inner side adnate to the foot of the column; front lobe broadly oblong or obovate-oblong, obtuse or apiculate, convex with reflexed sides, $4\frac{1}{2}$ lin. long; disc with 3 strong keels and a slender one on either side; spur conical, narrowed near the apex, 4–5 lin. long. Column 2–4 lin. long; foot longer than the column.—*Eulophia bella*, N. E. Brown in Gard. Chron. 1889, vi. 210.

Mozamb. Dist. British Central Africa: Zambesia, cultivated specimens, *O'Brien!* Manganja Hills, *Meller!* Shire Highlands, *Buchanan!* Mlanje, *Whyte!*

83. **L. saccatus,** *Rendle in Journ. Bot.* 1895, 172. Scapes about 2 ft. high, with several short sheaths below; racemes 6–7 in. long, loosely many-flowered. Bracts lanceolate, acute, 3–6 lin. long. Pedicels 5–8 lin. long. Sepals obovate-oblong, obtuse or minutely apiculate, 4 lin. long. Petals broadly suborbicular, 7–8 lin. long. Lip deeply trilobed; side lobes oblong, obtuse, $3\frac{1}{2}$ lin. long, completely adnate to the foot of the column; front lobe 5 lin. long, broadly elliptic-oblong, subobtuse, convex with reflexed sides; disc with 3 prominent keels in the middle, and a slender one on either side; spur conical, with a narrow, curved apex, 5 lin. long. Column stout, 3 lin. long; foot as long as or longer than the column.

Nile Land. British East Africa: Nandi Hills, 6000–7000 ft., on rocky ground, *Scott-Elliot*, 6988!

Near *L. milanjianus*, Rendle, but the flowers are larger, with larger, broad, obtuse sepals.

12. **PTEROGLOSSASPIS,** Reichb. f.; Benth. et Hook. f. Gen. Pl. iii. 542.

Sepals and petals free, spreading, subequal. Lip sessile at the base of the column, spreading, trilobed, ecalcarate; side lobes somewhat spreading at the base, inflexed above; front lobe larger, oblong or suborbicular; disc with three rows of tuberculate nerves and a pair of rounded calli in the angle formed by the base of the lip and column. Column very short and broad, without a foot; clinandrium rounded. Anther terminal, operculate, incumbent, 1-celled; pollinia 2, subglobose, or 4 confluent in pairs, affixed to a short, broad stipes and squamiform gland.—Terrestrial herbs, with thickened rhizome. Leaves one or two, petiolate, narrow, plicate. Scapes erect, with membranous sheaths below. Flowers medium-sized, in short dense racemes. Bracts small or narrow.

An endemic Tropical African genus of four species, nearly allied to *Eulophia*, but distinguished by the sessile, ecalcarate lip, and very short column. Bentham places it in the subtribe *Cyrtopodieæ*, near to *Zygopetalum*, which, however, is not where its affinity lies.

Nerves of lip tuberculate.
- Front lobe of lip suborbicular-oblong, very obtuse; disc 5–7-nerved . . . . . 1. *P. eustachya.*
- Front lobe of lip nearly obcordate, emarginate; disc 3–5-nerved . . . . . 2. *P. engleriana.*

Nerves of lip slightly verrucose.
- Lobes of lip subequal . . . . . 3. *P. ruwenzoriensis.*
- Front lobe of lip twice as broad as side lobes . . 4. *P. Carsoni.*

1. **P. eustachya,** *Reichb. f. Otia Bot. Hamb.* i. 67. Terrestrial, with stout rhizome. Leaves radical, narrowly lanceolate, acute or acuminate, $\frac{1}{2}$–$1\frac{1}{4}$ ft. long, narrowed below into a long petiole. Scape $2\frac{1}{2}$–$2\frac{3}{4}$ ft. high, with numerous, long, imbricate sheaths, the lower obtuse, the upper acute. Bracts lanceolate or ovate-lanceolate, acuminate, 7–9 lin. long. Sepals and petals oblong or elliptical-oblong, subobtuse or minutely apiculate, 5–6 lin. long. Lip sessile, trilobed, ecalcarate; side lobes divaricate, broadly oblong, obtuse, very slightly curved, 3 lin. long; front lobe quadrate-elliptic or broadly elliptic-oblong, obtuse, flat; disc with about five to seven tuberculate keels, and a pair of rounded calli in the angle between the lip and column. Column broad, 2 lin. long.

Nile Land. Abyssinia: *Schimper*, 1235! (1735, ex *Reichenbach.*)

2. **P. engleriana,** *Kränzl. in Engl. Jahrb.* xix. 249. Leaves $1\frac{1}{2}$ ft. long, 7 lin. broad. Scapes longer than the leaves, terminating in short, capitate racemes, $\frac{3}{4}$–$1\frac{1}{4}$ in. long. Flowers $\frac{1}{2}$ in. diameter, white with a purple-brown stripe on the side lobes of the lip, and a purple spot on the front lobe. Sepals cuneate-obovate, obtuse or apiculate, keeled at the back. Petals obtuse, narrower than the sepals, especially at the base, in other respects similar. Lip trilobed; side lobes obovate-oblong, very obtuse, embracing the column; nerves and ridges of the disc and side lobes very sparsely pilose; callus elevated at either side

of the base; front lobe larger, cuneate, retuse or emarginate; disc with three to five elevated tuberculate lines extending nearly to the apex. Column short, dilated and angled above.

Mozamb. Dist. German East Africa: Kilimanjaro; Marangu, 4500–4700 ft., among grass, *Volkens*, 266, 424.

Only known to me from the original description.

3. **P. ruwenzoriensis,** *Rolfe.* Leaves linear or lanceolate-linear, acuminate, 8–10 in. long, 4–6 lin. broad. Scapes 1½–2 ft. high, with many lanceolate, imbricate sheaths. Bracts lanceolate or linear-lanceolate, acuminate, 8–9 lin. long. Pedicels 4–5 lin. long. Sepals and petals elliptic-oblong, obtuse, 4–5 lin. long; base subcuneate. Lip trilobed, 4–4½ lin. long; side lobes roundish-oblong; front lobe suborbicular-oblong, as large as the side lobes; disc slightly verrucose, with a pair of erect calli in the basal angle. Column stout, 1½ lin. long.—*Eulophia ruwenzoriensis*, Rendle in Journ. Bot. 1895, 166.

Nile Land. British East Africa: Ruwenzori, eastern side, 6000–7000 ft., on sunny hillsides, *Scott-Elliot*, 7813! 7859! 5300 ft., on granite, *Scott-Elliot*, 7551!

A broad leaf mounted with the British Museum specimen, and described in the original description, apparently belongs to some quite different plant.

4. **P. Carsoni,** *Rolfe.* Leaves lanceolate-linear, acute, 6–8 lin. long, 4 lin. broad. Scapes 1¼–1½ ft. long, with four or five long, imbricate sheaths. Bracts linear-lanceolate, acuminate, ¾–1 in. long. Pedicels 4–5 lin. long. Sepals and petals oblong, subobtuse or apiculate, 4½ lin. long. Lip trilobed, 4 lin. long; side lobes oblong, obtuse; front lobe obovate, obtuse, twice as broad as the side lobes; disc slightly verrucose, with a pair of erect calli in the basal angle. Column stout, 1½ lin. long.

Mozamb. Dist. British Central Africa: Lake Tanganyika, *Carson!* Fwambo, 5250 ft., *Nutt!*

13. **ANSELLIA,** Lindl.; Benth. et Hook. f. Gen. Pl. iii. 537.

Sepals and petals subequal, free, spreading. Lip articulate to the foot of the column, 3-lobed; side lobes erect, parallel; middle lobe oblong or rounded; disc 2–3-keeled or lamellate. Column erect, equalling the side lobes of the lip, slightly curved, semiterete, with acute margins; base produced into a very short, broad, concave or slightly 2-lobed foot; clinandrium entire, scarcely prominent. Anther terminal, operculate, incumbent, convex or crowned with an obtuse conical appendage, imperfectly 2-celled; pollinia 2 or 4, confluent in pairs, waxy, ovate, rounded, attached to a short broad stipes and gland. Capsule oblong, without beak.—Epiphytic herbs. Stems tall, thickened or somewhat fusiform, leafy. Leaves distichous, long, plicate-veined. Peduncles terminal, branched. Flowers in lax panicles, rarely in racemes, pedicellate. Bracts small.

A genus of six species limited to Continental Africa, and only the South-eastern *A. gigantea*, Reichb. f., occurring outside the tropics.

Petals elliptic-oblong, distinctly broader than the sepals . 1. *A. africana.*
Petals oblong, not, or scarcely, broader than the sepals.

Disc of lip with three crenulate or verrucose keels; sepals and petals 1–1¼ in. long	2. *A. nilotica.*
Disc of lip with two keels, or the median one partially developed.	
Lip 7–8 lin. long; sepals and petals 10–12 lin. long.	
Leaves 1–1¼ ft. long; keels of lip verrucose or crenulate	3. *A. confusa.*
Leaves 6–8 in. long; keels of lip smooth	4. *A. humilis.*
Lip 5 lin. long; sepals and petals 9 lin. long	5. *A. congoensis.*

1. **A. africana,** *Lindl. in Bot. Reg.* 1844, *sub t.* 12. Pseudobulb elongate, somewhat thickened in the middle, 1½–2 ft. or more long. Leaves elliptic-oblong or lanceolate, subacute, 6–12 in. long, 1¼–1¾ in. broad. Panicle branched, 9–12 in. long, many-flowered. Bracts broadly ovate or ovate-oblong, subobtuse, 1½–3 lin. long. Pedicels 1–1¼ in. long. Sepals elliptic-oblong, obtuse, 11–14 lin. long. Petals a little broader than the sepals. Lip trilobed, 8–9 lin. long; side lobes semiovate, obtuse; front lobe broadly obovate-oblong, obtuse; disc puberulous, with 3 linear keels, the middle one smaller than the side. Column clavate, 6 lin. long.—Bot. Mag. t. 4965 (excl. fig. 3); Reichb. f. in Bonplandia, v. 134; Gartenfl. iii. 243, t. 95; Reichb. f. in. Walp. Ann. vi. 627; Reichb. f. Xen. Orch. ii. 18; Will. Orch. Alb. viii. t. 367.

Upper Guinea. Fernando Po: near Clarence (Sta. Isabel), in jungle, on *Elæis guineensis, Vogel,* 25! *Ansell!*

An Angolan species which has been referred here (Reichb. f. in Flora, 1865, 188) is known only from fruiting specimens, and therefore remains doubtful. It was collected at Bumbo, *Welwitsch,* 711! and Huilla, *Antunes,* 21!

2. **A. nilotica,** *N. E. Br. in Lindenia,* ii. 36. Pseudobulb 1–2 ft. long, elongate, a little thickened above the middle. Leaves lanceolate or oblong-lanceolate, subacute, 6–15 in. long, 1–1½ in. broad. Panicle 9–18 in. long, branched or rarely simple, racemose. Bracts triangular-ovate, subobtuse, 1½–2 lin. long. Pedicels 1½–1¾ in. long. Flowers deep yellow, spotted with brown. Sepals oblong, obtuse, 1–1¼ in. long. Petals similar to the sepals, subequal. Lip trilobed, 9–10 lin. long; side lobes semiovate, obtuse; front lobe obovate-oblong, obtuse; disc with 3 verrucose or crenulate keels, the middle one smaller than the side. Column clavate, 8 lin. long.—*A. africana* var. *nilotica,* Baker in Trans. Linn. Soc. xxix. 154; Reichb. f. Otia Bot. Hamb. ii. 74.

Nile Land. British East Africa: Mombasa, *Hildebrandt,* 1952! Ribe, *Wakefield!* Jomvu, *Wakefield!*

Mozamb. Dist. German East Africa: Usambara; Tanga, on *Hyphæne, Kirk!* Usagara; Mbwiga, 1200 ft., on tall trees, *Grant!*

Var. *rossiana,* Rolfe in Orch. Rev. i. 199. Flowers primrose yellow, with smaller and less numerous, much paler spots.

Nile Land. Zanzibar, cultivated specimens!

"The Wahiao use its jointed roots medicinally, and call the plant *Mitool'o.*"—*Grant.*

3. **A. confusa,** *N. E. Br. in Lindenia*, ii. 36. Pseudobulb 1½–3 ft. long, somewhat thickened in the middle. Leaves lanceolate or linear-lanceolate, acute, 1¼–1½ ft. long, 1¼–2 in. broad. Panicle 9–12 in. long, branched, many-flowered. Bracts oblong or ovate-oblong, subobtuse or acute, 2–4 lin. long. Pedicels 1–1¼ in. long. Sepals oblong, obtuse, 10–12 lin. long. Petals equal to, or scarcely broader than, the sepals. Lip trilobed, 7–8 lin. long; side lobes semiovate, obtuse; front lobe obovate or suborbicular; disc puberulous, 2-keeled or rarely with the middle keel slightly developed, verrucose or crenulate in front. Column clavate, 6 lin. long.—*A. africana*, Lindl. Bot. Reg. 1846, t. 30 (not 1844, sub t. 12); Paxt. Mag. Bot. xiii. 241, with plate; Puydt, Orch. 249, t. 5.

Upper Guinea. Without locality, long cultivated in gardens, *Loddiges!* Kaka River, Elephant Forest, *Earl of Scarborough!*

4. **A. humilis,** *Bull, Cat.* 1891, 3. Pseudobulb a little thickened in the middle, 6–9 in. long. Leaves oblong-lanceolate, subobtuse, 6–8 in. long, 1 in. broad. Panicle stalked, erect, 1½ ft. high, branched. Bracts oblong or ovate-oblong, acute, 1–2 lin. long. Pedicels 1–1¼ in. long. Sepals oblong, subobtuse, 10–11 lin. long. Petals similar to the sepals, subequal. Lip trilobed, 8 lin. long; side lobes semiovate, obtuse; front lobe obovate, obtuse; disc smooth, 2-keeled or with a much smaller middle one. Column clavate, 5 lin. long.—Gartenfl. 1891, 333; Kew Bulletin, 1892, App. ii. 30.

Mozamb. Dist. Portuguese East Africa: Lower Zambesi; Shupanga, growing on the Baobab, *Kirk! Scott!* Cultivated specimens, *Bull!*

There is also a var. *pallida*, Bull. l.c., with the ground colour of the flowers milk-white.

5. **A. congoensis,** *Rodigas in Ill. Hort.* 1886, 143 (*name only*); N. E. Br. in Lindenia, ii. 30, 35, t. 64. Pseudobulb elongate, slightly thickened in the middle, 9–12 in. long. Leaves oblong, subacute (immature). Panicle erect, 6–8 in. long, very slightly branched. Pedicels 1–1¼ in. long. Bracts ovate-triangular or triangular-oblong, acute, 1–2 lin. long. Sepals and petals lanceolate-oblong, subobtuse, 9 lin. long, yellow spotted with brown. Lip trilobed, 5 lin. long; side lobes semiovate, obtuse, white striped with purple; front lobe obovate-oblong, obtuse or emarginate, yellow; disc smooth, 2-keeled. Column clavate, 4–5 lin. long.

Lower Guinea. Congo, cultivated specimens, *Linden!*

14. **NEOBENTHAMIA**, Rolfe in Gard. Chron. 1891, x. 272, 273, fig. 33.

Sepals subequal, somewhat spreading; lateral slightly united at the base, and slightly adnate to the base of the lip. Petals free, similar to the sepals. Lip somewhat spreading, sessile at the base of the column and somewhat adnate to it, entire, fleshy and somewhat narrowed in the lower half; disc slightly hairy but without keels or crest. Column short and stout, footless, angles subacute; pollinia 2,

somewhat bifid, attached to two slender stipes, which are united at the extreme base, gland scale-like, semicircular.

An endemic monotype, allied to the Asiatic genus, *Bromheadia*, but very distinct from anything else.

1. **N. gracilis,** *Rolfe in Gard. Chron.* 1891, x. 272, 273, *fig.* 33. A tall, branching and somewhat straggling plant, 3–4 ft. high, with slender, suberect or spreading branches. Leaves distichous, numerous, linear, unequally bidentate, 5–7 in. long, 3–5 lin. broad. Raceme terminal, short, many-flowered. Bracts linear-setaceous, $1\frac{1}{2}$–2 lin. long. Pedicels 9–10 lin. long. Sepals and petals subequal, oblong, 5 lin. long, 2 lin. broad, white. Lip obovate-oblong, truncate or minutely apiculate, undulate on the sides, narrowed below, white with a yellow middle line and a row of rosy spots on either side; disc slightly pubescent. Column white; anther-case dull-purple, minutely puberulous.—Bot. Mag. t. 7221.

Mozamb. Dist. German East Africa: Usagara Mountains, about 100 miles inland, 1500 ft., cultivated specimens, *Kirk !*

Originally sent to Kew in 1884, and flowered there in 1890.

15. **POLYSTACHYA,** Hook.; Benth. et Hook. f. Gen. Pl. iii. 540.

Sepals connivent or somewhat spreading; dorsal free; lateral broader, sometimes very broad, adnate to the foot of the column. Petals like the dorsal sepal or often narrower. Lip superior, articulated to the foot of the column, base contracted, entire or 3-lobed. Column usually very short, broad, not winged, produced into a foot at the base; clinandrium short, truncate. Anther terminal, operculate, incumbent, very convex, 1-celled or imperfectly 2-celled; pollinia 4, waxy, broadly ovate, sometimes united in pairs, affixed to a short stipes and gland. Capsule oblong or fusiform, sometimes elongate.—Epiphytic herbs. Stems often short, sometimes thickened into pseudobulbs, mostly leafy. Leaves distichous, oblong or narrow, often many-nerved, contracted into sheaths at the base. Peduncle terminal, or rarely axillary, with a few sheaths below, apex paniculate or racemose. Flowers small, rarely medium-sized. Bracts small.

A widely diffused genus of over 90 species, most numerous in Tropical Africa, and comparatively rare in India.

Pseudobulbs or stems approximate or tufted.
Lip not less than a third as broad as long.
Rhachis of inflorescence nearly straight, except rarely in 59.
Crest of lip small, carinate or tooth-like.
Flowers under $\frac{3}{4}$ in. long.
Scapes several or many-flowered.
Chin of the flower almost or quite twice as long as the dorsal sepal.
Leaves lanceolate or lanceolate-oblong . 1. *P. leonensis.*
Leaves linear or oblong-linear.
Leaves 4–5 lin. broad; inflorescence many-flowered . . . 2. *P. farinosa.*

Leaves 2–3 lin. broad; inflorescence few-flowered . . . . 3. *P. bifida.*
Chin of the flowers not or very slightly exceeding the dorsal sepal.
Lip sessile, with small basal side lobes.
Leaves linear-lanceolate; inflorescence simple or slightly branched 4. *P. ensifolia.*
Leaves lanceolate; inflorescence dense, with several branches.
Side lobes of lip triangular, acute 5. *P. pyramidalis.*
Side lobes of lip ovate-oblong, subobtuse . . . . 6. *P. rhodoptera.*
Lip more or less unguiculate; side lobes, when present, not basal.
*Inflorescence paniculate, except in 12 and 13; bracts acute from a broad base; flowers 3–6 lin. long (plants turning black in drying).
Leaves solitary.
Leaves oblong . . . 7. *P. cultrata.*
Leaves linear (Eastern species) 8. *P. gracilenta.*
Leaves very narrow, $\frac{1}{2}$ lin. broad. (Western species) . 9. *P. tenuissima.*
Leaves two or more.
Flowers about 5–6 lin. long (see also 19).
Inflorescence a lax, many-flowered, panicle.
Lip unguiculate, trilobed . 10. *P. laxiflora.*
Lip rhomboid, obtuse-angled . . . 11. *P. dendrobiiflora.*
Inflorescence about 4-flowered 12. *P. albescens.*
Flowers under 4 lin. long.
Inflorescence simple . . 13. *P. nigrescens.*
Inflorescence branched.
Leaves 2–2$\frac{1}{2}$ lin. long . 14. *P. Rendlei.*
Leaves 3–5 in. long.
Side lobes of lip rounded 15. *P. Krænzlinii.*
Side lobes of lip angular, truncate in front . 16. *P. imbricata.*
**Inflorescence paniculate except sometimes in 17 and 30; bracts acute or acuminate from a broad base; flowers 1$\frac{1}{2}$–4 lin. long, except in 17 (plants not turning black in drying).
Flowers 6 lin. long . . . 17. *P. Rivæ.*
Flowers 1–4 lin. long.
Chin more or less obtusely conical.
†Leaves more or less expanded and flat.
Lip entire . . . 18. *P. paniculata.*
Lip trilobed.

Plant $\frac{3}{4}$–2 ft. high.
Flowers puberulous.
Front lobe of lip broad and nearly truncate . . 19. *P. odorata.*
Front lobe of lip oblong, subacute 20. *P. puberula.*
Flowers glabrous or subglabrous.
Flowers scarcely 2 lin. long . 21. *P. tessellata.*
Flowers $2\frac{1}{2}$–3 lin. long, green . 22. *P. Buchanani.*
Flowers 3–4 lin. long, reddish-brown . . 23. *P. rufinula.*
Plant $\frac{1}{2}$–$\frac{3}{4}$ ft. high.
Front lobe of lip broad and short.
Side lobes oblong, acute . . 24. *P. zanguebarica.*
Side lobes obtuse . 25. *P. modesta.*
Side lobes semi-ovate,apiculate 26. *P. shirensis.*
Front lobe of lip lin-ear-triangular or extended.
Side lobes triangular, free . 27. *P. bennettiana.*
Side lobes rounded, free . . 28. *P. Steudneri.*
Side lobes linear, free . . 29. *P. stauroglossa.*
Side lobes spathulate, united . 30. *P. Stuhlmanni.*
††Leaves more or less conduplicate.
Disc of lip slightly verrucose, with a pair of obscure keels . 31. *P. Mannii.*
Disc of lip puberulous, with a high keel at the base . . 32. *P. golungensis.*
Chin narrow and more or less elongated.
Plant about a foot high . 33. *P. ramulosa.*
Plant about 6 in. high . 34. *P. nitidula.*
***Inflorescence racemose, or branched in 36, 39, and 41; bracts long, setaceous-acuminate; flowers 1–2 lin. long (plant not turning black in drying).
Dorsal sepal obtuse . . . 35. *P. Dusenii.*
Dorsal sepal acute or acuminate.

Scape 6 in. or more high.
Lateral sepals 1 lin. long, acuminate.
Chin narrowed below the middle . . . 36. *P. elegans.*
Chin broadest below the middle.
Front lobe of lip subulate, acuminate . 37. *P. Ridleyi.*
Front lobe of lip ovate-lanceolate, acute . 38. *P. Polychæta.*
Lateral sepals 2 lin. long, setaceous-acuminate . 39. *P. setifera.*
Scape 3–4 in. high.
Flowers $1\frac{1}{2}$ lin. long . . 40. *P. albo-violacea.*
Flowers 2 lin. long.
Leaves subspathulate-oblong; disc of lip glabrous 41. *P. coriscensis.*
Leaves linear-oblong; disc of lip villous . . 42. *P. Adansoniæ.*
****Inflorescence racemose, except sometimes in 44, 45 and 59; bracts acute or acuminate from a broad base; flowers $2\frac{1}{2}$–5 lin. long (plants not turning black in drying).
Leaves not, or scarcely, 2 lin. broad.
Plant 2 in. high . . . 43. *P. minima.*
Plant 6 in. or more high.
Front lobe of lip ovate, acuminate . . . 44. *P. Shega.*
Front lobe of lip ligulate, obtuse . . . . 45. *P. Beccarii.*
Leaves 3 lin. or more broad.
Lip entire.
Leaves 3 lin. broad . . 46. *P. caduca.*
Leaves 6 lin. broad . . 47. *P. expansa.*
Lip trilobed.
Flowers $1\frac{1}{2}$–2 lin. long . 48. *P. angularis.*
Flowers $2\frac{1}{2}$–3 lin. long.
Pseudobulbs cylindrical . 49. *P. simplex.*
Pseudobulbs ovoid . . 50. *P. confusa.*
Flowers 4–5 lin. long.
†Leaves $3\frac{1}{2}$ in. or less long, oblong or proportionally broad.
Front lobe of lip ovate or elliptic-ovate.
Pseudobulbs 1–2-leaved.
Petals subspathulate-oblong . 51. *P. pachyglossa.*
Petals linear-oblong 52. *P. zambesiaca.*
Pseudobulbs 3–4-leaved . . 53. *P. Johnstoni.*

Front lobe of lip suborbicular . . . 54. *P. lawrenceana.*

††Leaves 4 in. or more long, or proportionally narrow.

Pseudobulbs ovoid or narrow (unknown in 57).

Callus of lip absent . 55. *P. Holstii.*

Callus of lip carinate.

Inflorescence puberulous . . 56. *P. Kirkii.*

Inflorescence villous 57. *P. villosa.*

Callus of lip semiquadrate . . 58. *P. dixantha.*

Pseudobulbs dorsally flattened . . . 59. *P. affinis.*

Scapes 1-*flowered* . . . . . 60. *P. cæspitifica.*

Flowers over $\frac{3}{4}$ in. long.

Lip nearly straight . . . . . 61. *P. grandiflora.*

Lip abruptly reflexed about the middle . 62. *P. reflexa.*

Crest of lip large, 4–6-lobed.

Plant 3–6 in. high; flowers paniculate . . 63. *P. Preussii.*

Plant about 2 in. high; flowers solitary . . 64. *P. alpina.*

Rhachis zigzag.

Stems with a single oblong-linear leaf . . 65. *P. disticha.*

Stems with oblong-lanceolate leaves . . . 66. *P. caloglossa.*

Lip very long, narrow, and doubly curved . . . 67. *P. elastica.*

Pseudobulbs or stems slender, superposed.

Flowers paniculate.

Leaves oblong or oblong-lanceolate . . . 68. *P. fusiformis.*

Leaves linear or lanceolate-linear . . . . 69. *P. superposita.*

Flowers racemose.

Claw of lip densely setose . . . . . 70. *P. spatella.*

Claw of lip smooth.

Stems and leaves $2\frac{1}{4}$–4 in. long . . . 71. *P. Elliotii.*

Stems and leaves 1–$1\frac{1}{4}$ in. long . . . 72. *P. ruwenzoriensis.*

Pseudobulbs ovoid, distantly arranged on a slender creeping rhizome.

Petals minutely tuberculate; front lobe of lip larger than the side lobes . . . . . 73. *P. bulbophylloides.*

Petals minutely setose; front lobe of lip nearly obsolete . . . . . 74. *P. micropetala.*

1. **P. leonensis,** *Reichb. f. Otia Bot. Hamb.* ii. 112. Pseudobulbs globose, depressed, $\frac{1}{2}$ in. diam., closely arranged along the rhizome; roots densely white-velvety; apex about 3–6-leaved. Leaves lanceolate or oblong-lanceolate, acuminate, 3–8 in. long, 6–13 lin. broad. Scapes 6–9 in. long, puberulous; racemes simple, lax, many-flowered. Bracts acuminate from a broad triangular base, $\frac{3}{4}$–1 lin. long. Pedicels 4–5 lin. long. Flowers light-green, sometimes suffused with brownish-purple; lip white, with some purple on the side lobes behind. Dorsal sepal ovate, obtuse, $1\frac{1}{2}$–2 lin. long; lateral broadly triangular, ovate, obtuse. Petals oblong, obtuse, 2 lin. long. Lip trilobed, 3 lin. long;

side lobes triangular-oblong, obtuse; front lobe rather larger, ovate, obtuse; disc carinate, farinaceous, puberulous. Column stout, 1 lin. long. Chin saccate, obtuse, $2\frac{1}{2}$–3 lin. long.—Rolfe in Gard. Chron. 1888, iii. 648. *P. affinis*, Lindl. in Bot. Reg. 1839, Misc. 35 (not of Gen. & Sp. Orch.); Reichb. f. in Walp. Ann. vi. 642.

Upper Guinea. Sierra Leone: *Barter!* cultivated specimen, *Loddiges!* Sugar-loaf Mountain, common on mossy rocks and old logs on the higher part, *Scott-Elliot*, 5822! Cameroons: Ambas Bay, *Lord Scarborough.*

Lindley confounded this species with his *P. affinis*, and then redescribed *P. affinis* as *P. bracteosa.*

2. **P. farinosa,** *Kränzl. in Engl. Jahrb.* xvii. 51. Plant 1–$1\frac{1}{2}$ ft. high. Pseudobulbs cylindric, elongate, about 6–8-leaved. Leaves oblong, linear, bidentate, 3–5 in. long, 3–5 lin. wide. Racemes simple, many-flowered, $1\frac{1}{2}$–3 in. long. Bracts triangular, apiculate, $\frac{1}{2}$–$\frac{3}{4}$ lin. long. Pedicels 4 lin. long. Flowers white. Dorsal sepal ovate-oblong, obtuse, $1\frac{1}{2}$ lin. long; lateral very shortly and broadly triangular, obtuse or apiculate. Petals elliptic-oblong, obtuse, $1\frac{1}{2}$ lin. long. Lip $3\frac{1}{2}$ lin. long, trilobed; side lobes ovate-oblong, obtuse, small; front lobe conduplicate and deeply keeled behind, oblong, obtuse; disc densely pulverulous with an oblong keel above the base. Column stout, 1 lin. long. Chin oblong, obtuse, 3 lin. long.

Upper Guinea. Cameroons: Mountains at 4000–5000 ft., *Mann*, 1339! 2115! Buea, 3500 ft., *Preuss*, 1064.

3. **P. bifida,** *Lindl. in Journ. Linn. Soc.* vi. 129. Plant about 1 ft. high. Stem elongate, cylindric, slender, about 5–6-leaved. Leaves linear, subobtuse, $2\frac{1}{2}$–$4\frac{3}{4}$ in. long, 2–3 lin. broad. Racemes simple, erect or nodding, 1–$1\frac{1}{2}$ in. long, 5–7-flowered. Bracts triangular, acute, $\frac{1}{2}$–$\frac{3}{4}$ lin. long. Pedicels 3–4 lin. long. Dorsal sepal ovate, obtuse, concave, $1\frac{1}{2}$ lin. long; lateral broadly triangular, obtuse. Petals linear, obtuse, $1\frac{1}{2}$ lin. long, membranous. Lip linear-oblong, trilobed, $2\frac{1}{2}$ lin. long; side lobes oblong, obtuse, small; front lobe oblong, fleshy, conduplicate, obtuse or tridentate, keeled below; disc with a thick puberulous, apiculate cushion at the base. Column stout, $\frac{3}{4}$ lin. long. Chin saccate-oblong, obtuse, $2\frac{1}{2}$ lin. long.—Kränzl. in Engl. Jahrb. xxii. 23.

Upper Guinea. Cameroon Mountains, *Preuss!* Fernando Po, 4000 ft., *Mann*, 649!

4. **P. ensifolia,** *Lindl. in Journ. Linn. Soc.* vi. 129. Plant 1–$1\frac{1}{4}$ ft. high. Stems subcylindric, elongate, slightly flexuous, 5–7-leaved. Leaves linear-lanceolate, acuminate, 3–8 in. long, 5–7 lin. broad. Scapes simple, or rarely slightly branched, erect or nodding, $1\frac{1}{2}$–2 in. long. Bracts triangular, acuminate, $1\frac{1}{2}$–2 in. long. Pedicels 2 lin. long. Flowers yellow. Dorsal sepal oblong-lanceolate, acute, concave, 2 lin. long; lateral triangular, acuminate. Petals spathulate-lanceolate, subacute, $1\frac{3}{4}$ lin. long. Lip hastately trilobed, 2 lin. long; side lobes triangular-oblong, subobtuse, short; front lobe obcordate-oblong, apiculate. Column stout, 1 lin. long. Chin saccate-oblong, obtuse,

1½ lin. long. Capsule oblong, ¾ in. long.—Reichb. f. in Flora, 1867, 114.

Lower Guinea. Princes Island, *Barter*, 1986! Angola: Golungo Alto; Mt. Cungolungulo, 2300 ft., on decaying tree trunks, *Welwitsch*, 670!

The Angolan specimen cited by Reichenbach is in fruit only, but looks a little different in the leaves and inflorescence, and turns black in drying.

5. **P. pyramidalis,** *Lindl. in Journ. Linn. Soc.* vi. 130. Plant 1½–2 ft. high. Stem tall, subcylindric, with about ten or eleven distichous leaves from the base to the apex. Leaves lanceolate or oblong-lanceolate, acute or acuminate, 3–8 in. long, ½–1 in. broad. Panicle shortly peduncled, a little branched, pyramidal, dense, 3–4 in. long. Bracts very broadly ovate or obscurely trilobed, slightly undulate, 2–2½ lin. long; rounded at the sides, triangular in front, acute or acuminate. Pedicels 2½–3 lin. long. Flowers yellow. Dorsal sepal ovate-oblong, acute, concave, 2½–3 lin. long; lateral broadly triangular-ovate, acute, strongly carinate. Petals oblong-lanceolate, acute, 2–2¼ lin. long. Lip trilobed, 3 lin. long; side lobes triangular, acute, incurved, situated close to the base; front lobe obcordate, with a small triangular fleshy mucro in the sinus; disc pubescent. Column stout, 1 lin. long. Chin triangular-oblong, obtuse, 2 lin. long.—*P. sulfurea*, Brongn. in Fl. des Serres, xv. 45.

Upper Guinea. Niger Delta: Banks of Nun River, *Mann*, 522!

P. sulfurea, Brongn., is probably identical, as he himself doubtfully suggested.

6. **P. rhodoptera,** *Reichb. f. in Hamb. Gartenz.* xiv. 214 ("*rhodopterya*"). Plant about 9 in. high. Stems 3–4-leaved. Leaves lanceolate, acuminate, 3–5 in. long, 2–7 lin. broad. Scape somewhat branched, dense-flowered. Bracts ovate-lanceolate, acute, reflexed, 2–2½ lin. long. Pedicels 3 lin. long. Flower light-pink, with a yellow lip. Dorsal sepal ovate-oblong, subobtuse, concave; lateral broadly triangular-ovate, apiculate, 2½ lin. long. Petals spathulate, concave, apiculate, 2 lin. long. Lip subsessile, trilobed, 3 lin. long; side lobes small, basal, ovate-oblong, subobtuse, incurved at the apex; front lobe obcordate-oblong, emarginate or shortly bilobed, very much larger. Column stout, 1½ lin. long. Chin saccate, obtuse, about 2 lin. long.—*Otia Bot. Hamb.* ii. 113. *P. carnea*, Brongn. in Fl. des Serres, xv. 45, t. 1521.

Upper Guinea. Sierra Leone, cultivated in the garden of the School of Medicine, Paris (ex *Reichenbach*).

Lower Guinea. Gaboon, *Le Comte*.

Flowered regularly since 1857 in the Jardin des Plantes, Paris (ex *Brongniart*).

I have only seen the published figure of this species.

7. **P. cultrata,** *Lindl. Bot. Reg. sub t.* 851. Pseudobulbs linear-oblong, or ovate, ⅓–4 in. long, 1-leaved. Leaves oblong, obtuse, or subacute, 2½–6 in. long, ¾–1¼ in. broad. Scapes equalling or exceeding the leaves, glabrous; panicle ¾–3 in. long, more or less branched. Bracts triangular-ovate, acute or acuminate, 1–1¼ lin. long. Pedicels 1–2 lin.

long. Dorsal sepal triangular-ovate, acute, $2\frac{1}{2}$ lin. long; lateral triangular-ovate, acuminate, carinate. Petals subspathulate-elliptic, acute, $2\frac{1}{4}$ lin. long. Lip trilobed, cuneate-unguiculate; side lobes semiovate, obtuse, short; front lobe ovate, apiculate; disc furfuraceous, with a thick fleshy callus between the side lobes. Column stout, $\frac{3}{4}$ lin. long. Chin triangular-oblong, obtuse, $1\frac{1}{2}$ lin. long.—Lindl. Gen. & Sp. Orch. 73; S. Moore in Baker, Fl. Maurit. 361. *Polystachya cultriformis*, Spreng. Syst. Veg. iii. 742; Kränzl. in Engl. Pfl. Ost-Afr. C. 155. *Dendrobium cultriforme*, Thou. Orch. Iles Afr. t. 87.

Upper Guinea. Cameroons: Buea, 3100 ft., *Preuss*, 1009!

Mozamb. Dist. German East Africa: Usambara; Silai and Mbaludorf, 6000 ft. (ex *Kränzlin*), Kilimanjaro, Marangu, 6500 ft., *Volkens*, 2082!

A specimen from Mt. Kilimanjaro, higher slopes to 10,000 ft. above Marangu, *Taylor!* is apparently the same species.

Also from Mauritius, Madagascar, and Bourbon.

8. **P. gracilenta,** *Kränzl. in Engl. Jahrb.* xix. 251. Plant 16–20 in. high. Stem very slender, shining, 1-leaved. Leaves linear, longer than the raceme. Scapes slender, with a few sheaths; panicles short and congested, $1\frac{1}{2}$–$2\frac{1}{2}$ in. high; branches ancipitous; inflorescence entirely glabrous. Bracts minute, triangular, acute, much longer than the ovary. Dorsal sepal ligulate, obtuse; lateral triangular, obtuse. Petals linear-spathulate, obtuse, about as long as the sepals. Lip much curved, complicate; side lobes semiobovate, roundish, very small; front lobe oblong, short, obtuse; callus rugulose, on upper third of lip to the apex. Chin conical, obtuse, lightly curved.—Kränzl. in Engl. Pfl. Ost-Afr. C. 155.

Nile Land. British East Africa: Ruwenzori, 8200 ft., *Stuhlmann*, 2334.

Allied to *P. cultrata*, Lindl. The author describes the material as deficient, and seems doubtful whether this species is distinct from the preceding one, though the flowers are described as twice as large. I have not seen it.

A specimen from Butagu, Ruwenzori, 8000 ft., *Scott-Elliot*, 8050! is apparently allied to this species.

9. **P. tenuissima,** *Kränzl. in Engl. Jahrb.* xix. 250. Stems very slender, $\frac{1}{2}$–1 lin. broad, 1-leaved. Leaves elongate-linear, acuminate, 6–9 in. long, $\frac{1}{2}$ lin. broad. Scapes slender, partly nodding, with a sheath at the base; panicles more or less secund; branches distant; rhachis and ovary smooth. Bracts very minute, triangular. Flowers only $\frac{1}{2}$ lin. diam. Dorsal sepal ovate, obtuse; lateral broadly oblong or suborbicular, apiculate. Petals linear-oblong, obtuse, minute. Lip cuneate; side lobes oblong, obtuse, rather large; front lobe scarcely larger, nearly orbicular; disc with a callus on the claw. Chin galeate, bifid at the apex. Capsule ovoid-oblong, shortly pedicellate, $2\frac{1}{4}$ lin. long.

Upper Guinea. Cameroons: Yaunde, *Zenker*, 609!

Remarkable for its long, very narrow leaves.

10. **P. laxiflora,** *Lindl. in Journ. Linn. Soc.* vi. 129. Plant 1–$1\frac{1}{2}$ ft. high. Stems fairly stout, 3–4-leaved, not thickened at the

base. Leaves lanceolate-oblong, shortly acuminate, subobtuse, 4–8 in. long, $\frac{3}{4}$–$1\frac{3}{4}$ in. broad. Panicle usually ample, 3–7 in. long. Bracts broadly triangular, shortly acuminate, $\frac{1}{2}$–1 lin. long. Pedicels 3 lin. long. Flowers whitish, pale yellow, or pale pink. Dorsal sepal ovate-lanceolate, acute, concave, 4 lin. long; lateral triangular-ovate, acute or acuminate. Petals spathulate-lanceolate, apiculate, 3 lin. long. Lip broadly unguiculate, trilobed, $3\frac{1}{2}$ lin. long; side lobes semiovate, subobtuse; front lobe broad, ovate-semiorbicular, apiculate; disc subglabrous, with a broad approximately round callus near the base. Column stout, $1\frac{1}{2}$ lin. long. Chin saccate, obtuse, 3 lin. long.—*P. galericulata*, Reichb. f. Otia Bot. Hamb. ii. 111.

Upper Guinea. Sierra Leone: Bafodeya and Freetown, *Scott-Elliot*, 5903! Lagos, *Millen!* Niger Delta: Nun River; on mangroves, *Barter*, 20126! Brass, *Barter*, 1055! Fernando Po, *Mann*, 437!

Lower Guinea. Gaboon: Como River, *Bates*, 477!

I cannot find any character by which to separate *P. galericulata*, Reichb. f.

11. **P. dendrobiiflora,** *Reichb. f. Otia Bot. Hamb.* ii. 76. Pseudobulbs fusiform. Pedicels elongate, with a long, lanceolate, free sheath below, paniculate above; branches racemose, 3–5-flowered. Flowers as large as in *Dendrobium barbatum*, Lindl. Sepals ligulate, acute. Petals a little narrower. Lip rhomboid, obtuse-angled; disc furfuraceous. Column angled near the stigma. Chin obtuse.—Durand & Schinz, Conspect. Fl. Afr. v. 34.

Lower Guinea. Angola (ex *Durand & Schinz*).

The author, in the original description, omits all reference to the native country and affinity, but it is apparently closely allied to the preceding species. I have not seen it.

12. **P. albescens,** *Ridl. in Bolet. Soc. Brot.* v. 199. Stems slender, 5 in. long, not thickened. Leaves narrow, lanceolate-linear, acuminate or acute, 4 in. long, $4\frac{1}{2}$ lin. broad. Scapes a little shorter than the longest leaves, flattened, short, about 4-flowered. Flowers as large as those of *P. laxiflora*, Lindl., nodding, greenish-white, with rose-coloured labellum. Bracts lanceolate, acuminate or acute, 2 lin. long. Pedicels 5 lin. long, scaberulous. Dorsal sepal lanceolate, acute; lateral triangular, acute, glabrous. Petals spathulate, acute, a little shorter than the sepals. Lip entire, hastate, recurved, as long as the sepals, pubescent, with a linguiform, fleshy callus in the middle. Column stout, short. Chin gibbous.

Lower Guinea. Island of St. Thomas: Peak of St. Thomas, about 7200 ft., *Moller*.

Only known to me from the description, but said to be allied to *P. rosea*, Ridl. and *P. galericulata*, Reichb. f., and to turn black in drying.

13. **P. nigrescens,** *Rendle in Journ. Bot.* 1895, 200. Plant about 7–9 in. tall. Stems slender, elongate, about 3–5-leaved. Leaves linear or oblong-linear, subobtuse, $1\frac{1}{2}$–4 in. long, 3–4 lin. broad. Scapes suberect, $2\frac{1}{2}$–3 in. long, few-flowered. Bracts lanceolate-acuminate from a

broader base, recurved, 1½–2 lin. long. Dorsal sepal ovate-oblong, acute, 2½–3 lin. long; lateral triangular, acuminate. Petals subspathulate-lanceolate, acute, 2½ lin. long. Lip 4 lin. long, cuneate-unguiculate at the base; limb broadly ovate or subtrilobed; side lobes broadly rounded; front lobe ovate, subacute, undulate, recurved; disc smooth with a pair of parallel linear-oblong calli in the centre. Chin saccate-oblong, obtuse, 3 lin. long. Capsule oblong, 10–13 lin. long.

Nile Land. British East Africa: Ruwenzori; Wimi, 7000–8000 ft., among tree-ferns, *Scott-Elliot*, 7897! Butagu, 9000–10,000 ft., among heather, *Scott-Elliot*, 7958!

14. **P. Rendlei,** *Rolfe.* Plant ½–3 ft. high. Stems cylindric, 2–5-leaved. Leaves linear–oblong, obtuse, 2–3¾ in. long, 4–5 lin. broad. Panicles 1½–2 in. long, many-flowered. Bracts triangular-ovate, acute or acuminate, 1–2½ lin. long. Dorsal sepal triangular-ovate, acute, 2½ lin. long; lateral broadly triangular, acute. Petals subspathulate-lanceolate, acute, with narrow base, 2½ lin. long. Lip 3 lin. long, unguiculate; limb obscurely trilobed; side lobes very broadly rounded; front lobe small, oblong, obtuse; disc puberulous; crest central, broadly oblong with raised margins. Chin saccate-oblong, obtuse, 3 lin. long. Capsule oblong, 8–11 lin. long.—*Polystachya*, n. sp. Rendle in Trans. Linn. Soc. ser. 2, iv. 46.

Mozamb. Dist. British Central Africa: Mlanje, *Whyte!* Zomba, 6000–7000 ft., *Kirk!*

The plant turns black in drying.

15. **P. Krænzlinii,** *Rolfe.* Plant 9–12 in. high. Stems cylindric, 3–5-leaved. Leaves oblong, minutely bidenticulate, 2½–4 in. long, 6–9 lin. broad. Panicles nearly sessile, 1½–2½ in. long. Bracts triangular-ovate, acute, 1½–2 lin. long. Pedicels 4 lin. long. Dorsal sepal triangular-ovate, acute, 3 lin. long; lateral broadly triangular; apex falcate-acuminate. Petals subspathulate-lanceolate, acute, 2½ lin. long. Lip 3 lin. long, unguiculate, subtrilobed; side lobes broadly rounded; front lobe triangular, acute; disc puberulous with a central, roundish-oblong tubercle. Column stout, ½ lin. long. Chin saccate-oblong, obtuse, 2¼ lin. long.—*P. shirensis*, Kränzl. in Engl. Pfl. Ost-Afr. C. 155 (not Reichb. f.).

Mozamb. Dist. German East Africa: Usambara; Mascheua, 6200 ft., on trees, *Holst*, 8748!

Very different from *P. shirensis*, Reichb. f., to which Kränzlin refers it. It turns black in drying, and is near *P. Rendlei*, Rolfe, and *P. imbricata*, Rolfe.

16. **P. imbricata,** *Rolfe in Kew Bulletin*, 1893, 172. Plant 4–6 in. high. Stems erect, 2–3-leaved. Leaves oblong-linear, acute, 3–5½ in. long, 2–6 lin. broad. Inflorescence a dense, branched, congested panicle, 1–4 in. long. Bracts ovate, acuminate, imbricate, rigid, 1–2 lin. long. Pedicels 3 lin. long. Dorsal sepal ovate-oblong, acute, 3 lin. long; lateral triangular, acuminate. Petals subspathulate-oblong, subobtuse, 2 lin. long. Lip trilobed, 3 lin. long, broadly semi-ovate, obtuse; side lobes broadly rounded; front lobe triangular-ovate,

apiculate; disc puberulous, with a central quadrate or roundish callus. Column stout, 1 lin. long. Chin oblong, obtuse, $2\frac{1}{2}$ lin. long.

Mozamb. Dist. British Central Africa, cultivated specimen!

Described from a plant cultivated by Mr. J. O'Brien, who received it from Mr. J. Buchanan, C.M.G. It is usually marked by its dense panicle and imbricate bracts.

17. **P. Rivæ,** *Schweinf. in Bull. Herb. Boiss.* ii. *App.* ii. 88. Plant 6–16 in. high. Pseudobulbs aggregated, subcompressed, bicarinate, not thickened below. Leaves 4–5, oblong-oval or oblong-linear, $4\frac{1}{4}$–6 in. long, 5–10 lin. broad. Peduncle longer than the raceme, clothed with 4–6 convolute sheaths. Bracts ovate, long cuspidate or subaristate, recurved, twice as long as the pedicels. Pedicels 3–4 lin. long. Flowers large, light yellow, nearly as broad as long. Sepals connivent; lateral triangular-ovate, acute or apiculate, slightly keeled, 6 lin. long, the gibbous base being 4 lin. long; dorsal oblong-ovate, acute or apiculate. Petals spathulate, as long as the dorsal sepal and scarcely half as broad. Lip shortly unguiculate, trilobed, as long as the lateral sepals, pubescent inside, yellow; side lobes connivent, broadly ovate, acute; front lobe similar, but thickened and recurved; disc convex. Capsule oblong-oval, rounded at the apex, shortly constricted at the base, 9 lin. long.

Nile Land. Eritrea: Cliffs near Selet, below Saganeiti, 6500 ft., *Schweinfurth*, 1272! 1686! Mt. Alamkale, near Aidereso, 5900 ft., *Schweinfurth*, 1809!

18. **P. paniculata,** *Rolfe.* Pseudobulb oblong, stout, 3–4-leaved, 3–$3\frac{1}{2}$ in. long. Leaves oblong, obtusely bilobed at the apex, 4–$5\frac{1}{2}$ in. long, $1\frac{1}{4}$–$1\frac{1}{2}$ in. broad. Inflorescence paniculate, shortly peduncled, with a pair of compressed, oblong, obtuse sheaths at the base, $1\frac{3}{4}$–$2\frac{1}{4}$ in. long; panicle branches 1–$1\frac{1}{4}$ in. long, many-flowered. Bracts subulate-lanceolate, $\frac{1}{4}$–$\frac{1}{3}$ lin. long. Pedicels 1 lin. long. Sepals lanceolate, acute, $1\frac{1}{2}$–$1\frac{3}{4}$ lin. long; lateral rather broader. Petals linear, acute, 1–$1\frac{1}{4}$ lin. long. Lip entire, ovate–oblong, acute, concave, reflexed at the apex, $1\frac{1}{4}$ lin. long; disc with a small, rounded tooth near the base. Column stout, $\frac{1}{2}$ lin. long. Chin shortly and broadly rounded, $\frac{1}{3}$ lin. long.—*Dendrobium paniculatum*, Sw. in Schrad. Neues Journ. i. 97; Pers. Syn. Pl. ii. 523; Lindl. Gen. & Sp. Orch. 92.

Upper Guinea. Sierra Leone, without precise locality, *Afzelius!*

19. **P. odorata,** *Lindl. in Journ. Linn. Soc.* vi. 130. Stems erect 3–9 in. high, a little stouter at the base. Leaves lanceolate or lanceolate-oblong, shortly or abruptly acuminate, narrowed below, 6–10 in. long, 1–$1\frac{3}{4}$ in. broad. Panicles 6–12 in. long, much branched above; branches puberulous. Bracts subulate-acuminate from a broader base, $1\frac{1}{2}$–2 lin. long. Pedicels 2 lin. long. Flowers white, fragrant. Dorsal sepal ovate-oblong, apiculate, $1\frac{3}{4}$ lin. long; lateral broadly ovate, apiculate, $2\frac{1}{2}$–$2\frac{3}{4}$ lin. long. Lip trilobed, $2\frac{1}{2}$ lin. long; side lobes oblong, obtuse, slightly curved; front lobe orbicular or broadly obovate- or obcordate-oblong; disc nearly pubescent, with a linear keel from the

middle to the base. Column oblong, 1 lin. long. Chin broadly saccate, obtuse, $1\frac{3}{4}$ lin. long. Capsule elliptic-oblong, 6–8 lin. long.—Kränzl. in Reichb. f. Xen. Orch. iii. 90, t. 248, figs. 14–16, t. 249, fig. 4; Kränzl. in. Mitth. Deutsch. Schutzgeb. ii. (1889) 156.

Upper Guinea. Lower Niger: Onitsa, *Barter*, 1483! Cameroons, *Braun!* Fernando Po, *Mann*, 436!

20. **P. puberula,** *Lindl. in Bot. Reg. t.* 851. Pseudobulbs ovate. Stems short. Leaves lanceolate or oblanceolate, subacute, 6–8 in. long, 10–12 lin. broad. Panicles branched, 3–7 in. long, many-flowered; branches puberulous. Bracts triangular-ovate, acuminate, 1–$1\frac{1}{2}$ lin. long. Pedicels $1\frac{1}{2}$–$2\frac{1}{2}$ lin. long. Flowers greenish-yellow. Dorsal sepal ovate-oblong, apiculate, $1\frac{1}{2}$ lin. long; lateral ovate, apiculate, 2 lin. long. Petals linear-oblong, apiculate, $1\frac{1}{2}$ lin. long. Lip trilobed, 2 lin. long; side lobes roundish-oblong; front lobe oblong, obtuse, equalling or scarcely larger than the side lobes; disc covered with a mealy pubescence and usually bearing a short, oblong, central callus. Column oblong, 1 lin. long, slightly pubescent on the face. Chin broadly saccate, obtuse, $1\frac{1}{2}$ lin. long.—Lindl. Gen. & Sp. Orch. 73; Benth. in Hook. Niger Fl. 530; Kränzl. in Mitth. Deutsch. Schutzgeb. ii. (1889) 156.

Upper Guinea. Sierra Leone; cultivated specimens, *Don! Loddiges!* Cameroons, *Braun*.

Flowered in the collection of the Horticultural Society in 1824.

Only known to me from garden specimens. The flowers are a little smaller than those of *P. odorata*, Lindl., and the front lobe of the lip is a little smaller, and has a much shorter keel.

21. **P. tessellata,** *Lindl. in Journ. Linn. Soc.* vi. 130. Stems leafy, 3–6 in. long, slightly swollen at the base. Leaves oblong, or elliptic-oblong, obtuse or subobtuse, 4–8 in. long, $\frac{3}{4}$–$1\frac{3}{4}$ in. broad. Scapes 1–$1\frac{1}{2}$ ft. high, with numerous lateral branches, the lowermost almost at the base, many-flowered. Bracts subulate-lanceolate from a broader base, acuminate, recurved, $\frac{3}{4}$–$1\frac{1}{2}$ lin. long. Pedicels 2–$2\frac{1}{2}$ lin. long. Dorsal sepal ovate-oblong, subobtuse, 1–$1\frac{1}{4}$ lin. long; lateral triangular-ovate, apiculate. Petals subspathulate-linear, apiculate, somewhat incurved, 1 lin. long. Lip trilobed, $1\frac{1}{2}$ lin. long; side lobes broadly oblong, obtuse, somewhat incurved; front lobe suborbicular or obcordate-orbicular, crenulate; disc mealy-pubescent, with a linear keel from base to apex. Column oblong, $\frac{3}{4}$ lin. long. Chin oblong, obtuse, $1\frac{1}{4}$ lin. long. Capsule oblong, 6 lin. long.—Ridl. in Bolet. Soc. Brot. v. 198. *P. Hypocrita*, Reichb. f. in Gard. Chron. 1881, xvi. 685.

Upper Guinea. Niger Delta: mouth of the Nun River, *Mann!*

Lower Guinea. St. Thomas: Angolares; at Lagoa and Angra de S. João, *Quintas*, 8! 84! Angola: Golungo Alto; at Cungulongo, on old tree trunks, *Welwitsch*, 655! Pungo Andongo; at Mata de Mutollo, *Welwitsch*, 704!

I am unable to find any character to separate *P. Hypocrita*, Reichb. f. The absence of tessellation in the flowers is of no importance, as this character only appears in the dried specimens.

Fruiting specimens collected in Sierra Leone, on fig-trees in Freetown cemetery, *Barter !* without locality, *Scott-Elliot !* and Niger Delta : Brass River, *Barter*, 1856 ! the latter marked as having "deep purple flowers," apparently represent a closely allied species. A similar specimen from Lagos, *Millen !* is also allied, but none of them are determinable in their present condition.

22. **P. Buchanani,** *Rolfe in Kew Bulletin*, 1893, 335. Plant $\frac{1}{2}$–$1\frac{1}{2}$ feet high. Stems short, slightly thickened, 2–4-leaved. Leaves lanceolate-oblong, subobtuse, 4–8 in. long, $\frac{3}{4}$–$1\frac{3}{4}$ in. broad. Scapes $\frac{1}{2}$–$1\frac{1}{2}$ ft. long, much branched above; branches dense, many-flowered, puberulous. Bracts triangular-subulate, acuminate, recurved, 1–$1\frac{1}{2}$ lin. long. Pedicels $2\frac{1}{2}$–3 lin. long. Flowers light yellow to green, with a faint trace of purple-brown near the margins of the sepals. Dorsal sepal ovate, acute, or apiculate, $1\frac{1}{4}$ lin. long; lateral triangular-ovate, apiculate, much larger than the dorsal. Petals spathulate-linear, subobtuse or apiculate, $1\frac{1}{4}$ lin. long. Lip trilobed, $1\frac{1}{2}$ lin. long; side lobes ovate-oblong, obtuse; front lobe orbicular-ovate; apex obtuse or emarginate, reflexed; disc farinaceous-pubescent; callus a linear, fleshy keel from the middle to near the base. Column stout, $1\frac{1}{4}$ lin. long. Chin saccate-oblong, obtuse, $1\frac{3}{4}$ lin. long. Capsule oblong, 6–8 lin. long.

Nile Land. British East Africa : Giryama Mountains, *Taylor !*
Mozamb. Dist. British Central Africa : cultivated specimens !

Described from a cultivated plant sent from British Central Africa by Mr. J. Buchanan, C.M.G., to Mr. J. O'Brien, of Harrow-on-the-Hill. Originally flowered at Glasnevin in 1889.

Taylor's specimen is in fruit only, but I think it belongs to this species.

23. **P. rufinula,** *Reichb. f. in Gard. Chron.* 1879, xi. 41. Pseudobulbs short, thickened at the base, 2–$2\frac{1}{2}$ in. long, 3-leaved. Leaves lanceolate-oblong, subobtuse, $3\frac{1}{2}$–6 in. long, $\frac{3}{4}$–1 in. broad. Scapes 6–8 in. or more long, branched above or rarely simple, many-flowered; branches slightly puberulous. Bracts subulate-lanceolate or ovate, acuminate, 1–2 lin. long. Pedicels 2–3 lin. long. Dorsal sepal ovate, apiculate, $1\frac{1}{2}$–2 lin. long; lateral triangular-ovate, much larger. Petals linear, acute, $1\frac{1}{2}$ lin. long. Lip trilobed, $2\frac{1}{2}$–3 lin. long; side lobes roundish-oblong; front lobe quadrate-suborbicular; apex emarginate or shortly bilobed; disc farinaceous-pubescent, with a central linear-oblong thickened callus. Column stout, 1 lin. long. Chin saccate-oblong, obtuse, $1\frac{1}{2}$–2 lin. long. Capsule elliptical-oblong, 6–7 lin. long.—Reichb. f. in Otia Bot. Hamb. ii. 76.

Mozamb. Dist. Zanzibar, cultivated specimens !

Only known from garden specimens, which are said to have been sent home by Dr. Kirk. It originally flowered in the collection of Captain Hincks, in 1879.

24. **P. zanguebarica,** *Rolfe.* Plant 6 in. or more high. Leaves oblong-lanceolate, subobtuse, 5 in. long, 6–9 lin. broad. Scapes paniculate, pedunculate, 6 in. long. Bracts triangular, acuminate, 1 lin. long; Pedicels 3 lin. long. Dorsal sepal ovate, acute, concave, $1\frac{1}{2}$ lin. long;

lateral triangular-ovate, acute. Petals linear-lanceolate, acute, $1\frac{1}{4}$ lin. long. Lip 2 lin. long, unguiculate, trilobed; side lobes oblong, acute, small; front lobe semiorbicular, crenulate, obtuse or retuse; disc glabrous with an acute keel. Column stout, $\frac{1}{2}$ lin. long. Chin saccate-oblong, obtuse, $1\frac{1}{2}$ lin. long.

Mozamb. Dist. Zanzibar, *Kirk !*

This is allied to the Natal *P. similis*, Reichb. f., but differs in having an acute keel to the lip.

25. **P. modesta,** *Reichb. f. in Flora*, 1867, 114. Pseudobulbs ovate-oblong, thickened at the base, $\frac{3}{4}$–1 in. long, 3-leaved. Leaves oblong, subobtuse, 3–$3\frac{1}{2}$ in. long, 5–8 lin. broad. Pedicels smooth. Panicles slightly branched, dense, $\frac{1}{2}$–$2\frac{1}{4}$ in. long. Bracts small. Flowers $1\frac{1}{2}$ lin. long, yellow. Dorsal sepal ovate-oblong, acute, $1\frac{1}{4}$ lin. long; lateral triangular-ovate, acute. Petals linear-oblong, acute, $1\frac{1}{4}$ lin. long. Lip trifid in front; side lobes antrorse, obtuse; front lobe broader, crenulate; disc furfuraceous; callus ancipitous at the base. Chin $\frac{1}{2}$ lin. long. Capsule elliptical-oblong, $3\frac{1}{2}$ lin. long.

Lower Guinea. Angola: Pungo Andongo; near Quisonde, on trunks of old trees in the primæval woods, very rare, *Welwitsch*, 675 !

Allied to *P. nitidula*, Reichb. f., but much smaller. The British Museum specimen consists of a single flower and fruit, accompanied by a sketch.

26. **P. shirensis,** *Reichb. f. Otia Bot. Hamb.* ii. 112. Stems dwarf, 5-leaved. Leaves linear-oblong, subobtuse, $2\frac{1}{2}$–$4\frac{1}{2}$ in. long, 5–8 lin. broad. Scapes 6 in. long. Panicle small, $1\frac{1}{2}$ in. long, with 2 very short branches. Bracts triangular-ovate, acute, $\frac{1}{2}$ lin. long. Dorsal sepal ovate, obtuse, $\frac{3}{4}$ lin. long; lateral triangular-ovate, obtuse, twice as large as the dorsal one. Petals oblong, obtuse, $\frac{3}{4}$ lin. long. Lip (ex *Reichenbach*) cuneate, dilated, trilobed to the middle; side lobes semi-ovate, apiculate, flat, incumbent, larger than the front lobe; disc furfuraceous, carinate towards the base. Column stout, $\frac{1}{2}$ lin. long. Chin saccate-oblong, obtuse, $\frac{1}{4}$ lin. long. Capsule elliptic-oblong, 3 lin. long.

Mozamb. Dist. British Central Africa: Lower Valley of River Shire, *Meller!*

The lip was imperfect in the single withered flower examined, which was taken from the apex of a nearly mature capsule on the type specimen. A plant collected at Madi by Speke and Grant, 715! is very similar, though apparently not identical. The plant cited by Kränzlin as *P. shirensis* is quite distinct. See *P. Kræzlinii*, Rolfe.

27. **P. bennettiana,** *Reichb. f. Otia Bot. Hamb.* ii. 113. Stems fusiform, not pseudobulbous, 4-leaved. Leaves cuneate-ligulate, 5 in. long, 5–6 lin. broad; apex unequally acute. Racemes with a small branch at the base, few-flowered. Bracts triangular, minute. Pedicels obscurely puberulous. Flowers scattered. Dorsal sepal narrow; lateral much broader, triangular. Petals lanceolate, acute; base cuneate. Lip with a very short base, cuneate-dilated, trilobed; side lobes triangular; front lobe extended, broader. Chin very short, conical.

Nile Land. Abyssinia, *Schimper !*

Allied to *P. caduca*, Reichb. f., but larger, and with a differently shaped lip.

28. **P. Steudneri,** *Reichb. f. Otia Bot. Hamb.* ii. 113. Plant 6–8 in. high. Stems short, slightly thickened into an oblong pseudobulb below, 4–5-leaved. Leaves linear-lanceolate, acute, not coriaceous, 2–4½ in. long, 3–5 lin. broad. Scapes slightly puberulous, simple or slightly branched. Bracts triangular-ovate, acute, or aristate, ¾ lin. long. Flowers about 1¼ lin. long. Sepals triangular, the dorsal narrow. Petals linear. Lip trilobed, with a short linear claw; side lobes rounded; front lobe linear-ligulate, acute; disc furfuraceous, with an angled keel extending down the middle of the disc. Chin obtusely angled, minute. Capsule elliptical-oblong, 3 lin. long.

Nile Land. Abyssinia: Begemeder; Upper Guang, "on *Acacia sanguinea*," *Steudner*, 704. Fogara, near the River Reb, *Steudner*, 702!

The character of the flowers is taken from Reichenbach's description, the specimens seen being imperfect.

29. **P. stauroglossa,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 155. Stems aggregated, not bulbous, 4–5-leaved. Leaves linear-lanceolate, acuminate, minutely bilobed. Panicles sparingly branched, smooth, with many small flowers. Bracts triangular, very minute. Flowers 1 lin. diam., whitish-yellow with rosy margins. Dorsal sepal ovate; lateral much larger, nearly quadrate, concave. Petals ligulate, subacute. Lip very narrow, linear at the base, trilobed; side lobes linear; front lobe triangular, acute, smaller than the side lobes; disc swollen. Chin very obtuse or nearly absent.—Kränzl. in Engl. Jahrb. xxii. 22.

Nile Land. British East Africa: West of Lendu, 3600 feet, *Stuhlmann*, 2670.

Only known to me from the original description.

30. **P. Stuhlmanni,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 155. Habit of *P. Steudneri*, Reichb. f. Stems not thickened at the base or only slightly so, 3–4-leaved. Leaves linear, obtuse. Scapes simple or sparingly branched, slightly puberulous. Flowers very small. Dorsal sepal ovate, acute, minute; lateral triangular, aristulate, much larger. Petals linear. Lip trilobed; side lobes erect, spathulate in front and united; front lobe linear-triangular, acuminate; disc puberulous with some crystalline hairs.—Kränzl. in Engl. Jahrb. xxii. 22.

Nile Land. British East Africa: Mpororo, *Stuhlmann.*

Mozamb. Dist. German East Africa: Bukoba, on Lake Victoria Nyanza, *Stuhlmann*, 4105.

Said to be allied to *P. Steudneri*, Reichb. f., but the flowers are smaller and more hairy, and the side lobes of the lip are united in a remarkable way. I have not seen it.

31. **P. Mannii,** *Rolfe.* Plant 9–12 in. high. Stems cylindrical, 3–4 in. high, 4–5-leaved. Leaves oblong-linear, subobtuse, 4–5 in. long. Panicles slightly branched, 4–5 in. long. Bracts linear-setaceous, reflexed, 1–2 lin. long. Pedicels 1½ lin. long. Dorsal sepal ovate, subobtuse or apiculate, concave, 1 lin. long; lateral ovate-oblong, carinate, apiculate. Petals ovate-oblong, subobtuse, ¾ lin. long. Lip

2 lin. long, broadly unguiculate, subtrilobed; side lobes broadly rounded; front lobe broadly ovate, subobtuse or apiculate; disc slightly verrucose and with a pair of obscure keels. Column stout, $\frac{1}{2}$ lin. long. Chin oblong, obtuse, $1\frac{1}{2}$ lin. long.

Upper Guinea. Cameroon Mountains, 4000–6000 feet, *Mann*, 2113 in part!

32. **P. golungensis,** *Reichb. f. in Flora*, 1865, 185. Plant 10 in. high. Stems short, slightly swollen at the base, 2–3-leaved. Leaves linear or oblong-linear, obtuse, rather rigid, $1\frac{1}{2}$–4 in. long, 3–4 lin. broad, "canaliculate, falcate, curved" (*Welwitsch*). Scapes puberulous, somewhat branched above; flowers densely arranged on the branches. Bracts broadly triangular-ovate, acute, $\frac{1}{2}$ lin. long. Pedicels 1 lin. long. Dorsal sepal ovate, subobtuse, $\frac{3}{4}$ lin. long; lateral broadly triangular-ovate, obtuse. Petals oblong-linear, $\frac{1}{2}$ lin. long. Lip trilobed, $1\frac{1}{4}$ lin. long; side lobes oblong, obtuse; front lobe broadly ovate, obtuse or emarginate, much larger than the side lobes; disc puberulous and with a high keel at the base. Column stout, $\frac{1}{3}$ lin. long. Chin saccate, obtuse, 1 lin. long. Capsule elliptic-oblong, $2\frac{1}{2}$ lin. long.—Reichb. f. Otia Bot. Hamb. i. 60.

Lower Guinea. Angola: Golungo Alto, "the commonest of all orchids in this region, and not infrequent on old branches of *Adansonia*," *Welwitsch*, 674!

South Central. Monbuttu, *Schweinfurth*, 3450!

Schweinfurth's Monbuttu specimen has a dwarfer scape and shorter capsules, so that its identity is a little uncertain.

33. **P. ramulosa,** *Lindl. in Bot. Reg.* 1838, *Misc.* 76. Stems very short. Leaves subradical, lanceolate-oblong or elliptic-oblong, subacute or apiculate, 3–5 in. long, 10–13 lin. broad. Scapes 6–9 in. long, branched above; branches puberulous. Bracts ovate-lanceolate, acuminate or subulate-acuminate from a broader base, $\frac{1}{2}$–$\frac{3}{4}$ lin. long. Pedicels 1 lin. long. Dorsal sepal ovate-oblong, apiculate, $\frac{3}{4}$ lin. long; lateral obliquely ovate, falcate-apiculate, broader. Petals linear-oblong, apiculate, over $\frac{1}{2}$ lin. long. Lip trilobed, $\frac{3}{4}$ lin. long; side lobes ovate, apiculate, or broadly rounded-auriculate; front lobe ovate, apiculate, a little longer than the side lobes; disc glabrous. Column oblong, scarcely $\frac{1}{4}$ lin. long. Chin oblong, subobtuse, $\frac{3}{4}$ lin. long.—Walp. Ann. vi. 643; Kränzl. in Mitth. Deutsch. Schutzgeb. ii. (1889) 156.

Upper Guinea. Sierra Leone, cultivated specimens, *Loddiges!* Ashanti: Assin-Yan-Coomassie, on high trees, *Cummins!*

The side lobes of the lip are more rounded and auriculate in Cummins' Ashanti specimens, but otherwise the two plants seem identical.

34. **P. nitidula,** *Reichb. f. in Flora*, 1867, 114. Plant 5–6 in. high. Stems scarcely swollen at the base, 3-leaved. Leaves linear-oblong, acute, $1\frac{1}{2}$–3 in. long, 4–5 lin. broad, nitidulous on both sides. Bracts broadly triangular-ovate, acuminate, $\frac{3}{4}$ lin. long. Peduncle densely vaginate, with scarious acute sheaths; branches of panicle puberulous, subflexuous, scarcely branched. Pedicels $1\frac{1}{2}$ lin. long. Flowers pale purple or violet-purple, $1\frac{1}{2}$ lin. long. Lip very short,

dilated from a cuneate base, trilobed; side lobes obtusely angled; front lobe large, broad, semiovate, emarginately bilobed; disc copiously hairy; callus swollen, pilose, oblong, narrow at the extreme base. Chin acutely angled, 1 lin. long.

Lower Guinea. Angola: Golungo Alto, near Cuango rivulet, on stems of *Adansonia*, very rare, *Welwitsch*, 659!

35. **P. Dusenii,** *Kränzl. in Engl. Jahrb.* xix. 250. Stems aggregated, elongate, slender, 2–3-leaved. Leaves recurved, linear, apex bilobed; lobes rounded. Scapes as long as the leaves, setose. Bracts long-aristate, shorter than the ovary, deflexed after flowering. Flowers tessellated. Dorsal sepal oblong, obtuse, minute; lateral forming a very obtuse galea at the base; apex mucronate. Petals linear, acute, much smaller than the sepals. Lip cuneate; side lobes semiobovate, ascending, implicate; front lobe triangular, acuminate, deflexed. Column very stout. Chin very obtuse.

Upper Guinea. Cameroons, *Dusén*, 261.

Only known to me from the original description. It is allied to *P. tessellata*, Lindl., but is much dwarfer. The largest specimen is said to be only 8 in. high.

36. **P. elegans,** *Reichb. f. Otia Bot. Hamb.* ii. 113. Plant 1 ft. high. Stems stoutish, cylindrical, 3–4-leaved, 3–5 in. long. Leaves linear-oblong, obtuse, 3–5 in. long, 4–7 lin. broad. Panicles 4–5 in. long, branched; branches densely puberulous, many-flowered. Bracts setaceous, acuminate from a slightly broader base, 1–1¼ in. long. Pedicels 1 lin. long. Dorsal sepal ovate-oblong, acute, concave, 1 lin. long; lateral triangular-ovate, acuminate. Petals lanceolate-oblong, acute, 1 lin. long. Lip 2 lin. long, broadly unguiculate; side lobes rounded, obtuse; front lobe broadly triangular-ovate, mucronate; disc glabrous. Column stout, ⅓ lin. long. Chin oblong-obtuse, 1¼ lin. long. Capsule broadly pyriform-oblong, 1½ lin. long.

Upper Guinea. Cameroon Mountains, 4000–6000 ft., *Mann*, 1338! 2113!

In the dried state the flowers become a dull cinnabar-orange colour. A plant from the island of St. Thomas, which has been referred here by Ridley, is distinct. See next species.

37. **P. Ridleyi,** *Rolfe.* Pseudobulbs fusiform-oblong, 1½ in. long, 3–4-leaved. Leaves elliptic-oblong, obtuse, 3 in. long, 5 lin. broad. Inflorescence racemose. Bracts setaceous, reflexed, 2–3 lin. long. Pedicels short. Dorsal sepal triangular-ovate, acuminate, 1 lin. long; lateral broader and more acuminate. Petals filiform, ½ lin. long. Lip ¾ lin. long, very shortly unguiculate, trilobed; side lobes broadly rounded; front lobe subulate-acuminate, longer than the side lobes. Column stout, ¼ lin. long. Chin saccate-obtuse, ¾ lin. long. Capsule elliptic-oblong, 2 lin. long.—*P. elegans*, Ridl. in Bolet. Soc. Brot. v. 198 (not Reichb. f.).

Lower Guinea. St. Thomas, 2600 ft., *Moller*, 1! Bom Successo, 4300 ft., on trees, *Moller*, 83!

Distinct from *P. elegans*, Reichb. f., to which it is referred by Ridley.

38. **P. Polychæte,** *Kränzl. in Engl. Jahrb.* xvii. 50. Plant 6–9 in. high. Stems slightly thickened below, 4–5-leaved. Leaves oblong-linear, obtuse, 2½–5 in. long, 3–5 lin. broad. Scapes pubescent; racemes erect, simple, very dense. Bracts linear-setaceous from a slightly broader base, deflexed, 1½–2 lin. long. Pedicels 1 lin. long. Flowers greenish-white. Dorsal sepal ovate, acute, ¾ lin. long; lateral triangular-ovate, mucronate-acuminate. Petals linear, acute, 3–4 lin. long. Lip trilobed, ¾ lin. long; side lobes rounded, auriculate; front lobe ovate-lanceolate, acute; disc a little hairy. Column stout, ⅓ lin. long. Chin saccate-oblong, obtuse, ¾ lin. long.—Kränzl. in Engl. Pfl. Ost-Afr. C. 155.

Upper Guinea. Cameroon Mountains, in the primæval forest, West of Buea, 4200 ft., *Preuss*, 881.

Mozamb. Dist. German East Africa: Bukoba, on Lake Victoria Nyanza, *Stuhlmann!*

Kränzlin identifies the Western and Eastern plants together. I have only seen the latter, from which the above description is taken.

39. **P. setifera,** *Lindl. in Journ. Linn. Soc.* vi. 130. Stems short, slightly thickened below, 2–3-leaved. Leaves lanceolate or oblong-lanceolate, subobtuse, 3–7 in. long, 7–12 lin. broad. Scapes about 9 in. long. Panicles small, with about 2 side branches, puberulous. Bracts setaceous-acuminate from a broader base, 1–2 lin. long. Pedicels ¾ lin. long. Flowers puberulous, dull purple. Dorsal sepal oblong-lanceolate, acuminate, 1½ lin. long; lateral ovate-oblong, setaceous-acuminate, 2 lin. long. Petals linear, acuminate, 1 lin. long. Lip subentire, ovate, subacuminate, 1½ lin. long, submembranous, with a narrow, slender, central keel. Column stout, ½ lin. long. Chin saccate-oblong, obtuse, ½ lin. long.

Lower Guinea. Princes Island, *Barter*, 1984!

Remarkable for the setaceous sepals and the thin, ovate lip.

40. **P. albo-violacea,** *Kränzl. in Engl. Jahrb.* xvii. 50. Pseudobulbs approximate, ovate-oblong, ¾–1 in. long, 2–3-leaved. Leaves linear or oblong-linear, obtuse, 1½–3 in. long (or longer, fide *Kränzlin*), 3 lin. broad. Scapes 4 in. long; racemes simple, puberulous. Bracts narrowly setaceous from a broader base, reflexed, 1½ in. long. Pedicels 1–1½ lin. long. Dorsal sepal ovate, acute or apiculate, ¾ lin. long; lateral triangular-ovate, acuminate, much larger than the dorsal. Petals linear, subacute, ¾ lin. long. Lip trilobed, 1 lin. long; side lobes roundish-oblong or auriculate; front lobe ovate-lanceolate, acute, longer than the side lobes; disc naked, but with a small callus between the side lobes. Column stout, ⅓ lin. long. Chin saccate-oblong, obtuse, 1 lin. long.

Upper Guinea. Cameroons: Barombi, on trees, *Preuss*, 298!

41. **P. coriscensis,** *Reichb. f. Otia Bot. Hamb.* ii. 112. Plant 3–5 in. high. Stems very short, slightly thickened, 3–4-leaved. Leaves oblong or subspathulate-oblong, obtuse, 1½–3½ in. long, 3–6 lin. broad.

Scapes short, puberulous, simple or rarely slightly branched, many-flowered. Bracts setaceous-acuminate, deflexed, $1\frac{1}{2}$–$2\frac{1}{2}$ lin. long. Pedicels 1–$1\frac{1}{2}$ lin. long. Dorsal sepal ovate or ovate-oblong, subacute, 1 lin. long; lateral triangular-ovate, acuminate, much larger than the dorsal. Petals linear, acuminate, 1 lin. long. Lip trilobed, $1\frac{1}{2}$ lin. long, broad at the base; side lobes broad, with obtuse, rounded apex; front lobe triangular, acute; disc not hairy and without a callus. Column stout, $\frac{1}{2}$ lin. long. Chin saccate-oblong, obtuse, $1\frac{1}{4}$ lin. long.

Lower Guinea. Gaboon: Corisco Bay, *Mann*, 1884!

42. **P. Adansoniæ,** *Reichb. f. in Flora*, 1865, 185. Plant 4–5 in. high. Pseudobulbs approximate, ovate-oblong, $\frac{3}{4}$–$1\frac{1}{4}$ in. long, 3–4-leaved. Leaves oblong-linear, obtuse, $1\frac{1}{2}$–$2\frac{1}{2}$ in. long, 3–4 lin. broad. Scapes hispidulous-pubescent; racemes simple, $1\frac{1}{4}$ in. long, many-flowered. Bracts setaceous-acuminate, 2–$2\frac{1}{2}$ lin. long. Pedicels $1\frac{1}{2}$ lin. long. Dorsal sepal ovate, acuminate, $1\frac{1}{2}$ lin. long; lateral triangular-ovate, acuminate. Petals falcate-linear, acuminate, $1\frac{1}{2}$ lin. long. Lip trilobed, $1\frac{1}{2}$ lin. long; side lobes rounded-auriculate; front lobe lanceolate, acuminate, reflexed; disc villous. Column stout, $\frac{1}{2}$ lin. long. Chin saccate-oblong, obtuse, 1 lin. long. Capsule elliptical-oblong, 3–4 lin. long.—Reichb. f. Otia Bot. Hamb. ii. 112 (in note).

Lower Guinea. Angola: Golungo Alto, "through the whole district on trunks of *Adansonia*," *Welwitsch*, 654!

43. **P. minima,** *Rendle in Journ. Bot.* 1895, 198. Plant $2\frac{1}{4}$ in. high. Stems short, slender, 2-leaved. Leaves linear, subobtuse, $2\frac{1}{4}$ in. long, $1\frac{3}{4}$ lin. broad. Scapes short, slender, flexuous, setulose; racemes few-flowered. Bracts ovate-lanceolate, acute. Pedicels 1 lin. long. Dorsal sepal ovate-oblong, acute, concave, $2\frac{1}{2}$ lin. long; lateral triangular, acute. Petals linear-lanceolate, acute, $2\frac{1}{2}$ lin. long. Lip unguiculate, $2\frac{1}{2}$ lin. long, limb obscurely trilobed; side lobes rounded; front lobe ovate-acuminate; disc wholly pubescent. Column stout, 1 lin. long. Chin narrowly oblong, obtuse, $1\frac{1}{2}$ lin. long.

Mozamb. Dist. British Central Africa: Shire Highlands; Mount Sochi, on trees, *Scott-Elliot*, 8519!

44. **P. Shega,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 155. Plant 6–9 in. high. Pseudobulbs aggregated, a little swollen at the base, 2–3-leaved. Leaves linear, acute, 2–6 in. long, 1–$1\frac{1}{2}$ lin. broad. Racemes hispidulous-puberulous, simple, many-flowered, $1\frac{1}{2}$–3 in. long. Bracts ovate-lanceolate, acuminate, 1–2 lin. long. Pedicels 2–$2\frac{1}{2}$ lin. long. Dorsal sepal lanceolate, acuminate, 4–$4\frac{1}{2}$ lin. long; lateral triangular-lanceolate, acuminate. Petals lanceolate, acuminate, $3\frac{1}{2}$ lin. long. Lip trilobed, $3\frac{1}{2}$ lin. long; side lobes semi-oblong, rounded at the apex; front lobe ovate, acuminate; disc glabrous. Column stout, 1 lin. long. Chin oblong, obtuse, $1\frac{1}{2}$ lin. long.—Kränzl. in Engl. Jahrb. xxii. 22.

Mozamb. Dist. German East Africa: Usambara; Mlalo and Amboni, among stones, *Holst*, 2431!

There is a slender basal branch on the inflorescence, but the species has no affinity with the paniculate set. The name appears to be derived from the native name "*Shega.*"

45. **P. Beccarii,** *Reichb. f. in Martelli, Florul. Bogos.* 80. Pseudobuibs cylindrical, slender, 1 in. long, 3-leaved. Leaves linear-lanceolate, 5 in. long, 2 lin. broad. Peduncles slender, 1 ft. long; rhachis very slightly puberulous, racemose. Bracts triangular, scarcely as long as the pedicel. Dorsal sepal acute; lateral triangular, acute, broader than the dorsal. Petals ligulate, acute. Lip broadly clawed, trilobed; side lobes obtusely auriculate; front lobe ligulate, obtuse, with an ancipitous callus on the claw; disc slightly furfuraceous. Column very short. Chin angulate, dwarf.

Nile Land. Eritrea: along the road from Keren to Massowa, near Maldi, *Beccari.*

Only known to me from the original description.

46. **P. caduca,** *Reichb. f. Otia Bot. Hamb.* ii. 110. Pseudobulbs ovoid, 4–6 lin. long, 2–3-leaved. Leaves linear or oblong-linear, subacute or apiculate, 1–3 in. long, 2–3 lin. broad. Scapes $1\frac{1}{2}$–2 in. long, few-flowered, puberulous. Bracts ovate-lanceolate, acuminate, $1\frac{1}{2}$–2 lin. long. Pedicels $2\frac{1}{2}$ lin. long. Dorsal sepal ovate-oblong, concave, $2\frac{1}{2}$ lin. long; lateral obliquely triangular, acuminate. Petals lanceolate-oblong, acuminate, $2\frac{1}{4}$ lin. long. Lip unguiculate, 3 lin. long, entire; limb ovate, acuminate, slightly undulate, puberulous, with a transverse callus near the base. Column stout, $\frac{1}{2}$ lin. long. Chin oblong, obtuse, $2\frac{1}{4}$ lin. long. Capsule oblong, 4 lin. long.

Nile Land. Abyssinia, 8200 ft., on tree stems, *Schimper,* 1159!

47. **P. expansa,** *Ridl. in Bolet. Soc. Brot.* v. 198. Pseudobulbs conical, $1\frac{1}{2}$ in. long, $1\frac{1}{2}$ in. thick at the base, 2-leaved. Leaves lanceolate-lorate, obtuse, 6 in. long, $\frac{1}{2}$ in. broad, the upper shorter. Scapes stoutish; racemes many-flowered; rhachis stout, pubescent. Flowers $\frac{1}{2}$ in. diam., resupinate, expanded. Bracts cupuliform, short, apiculate. Dorsal sepal obovate, obtuse, apiculate; lateral broadly oblong-ovate, obtuse, shortly mucronate, widely spreading. Petals oblong, truncate, shorter than the sepals. Lip entire, recurved, sigmoid-oblong, dilated at the apex, abruptly truncate, with a tooth-like, appressed, acute callus at the base, pruinose nearly all over. Column short.

Upper Guinea. Sierra Leone, without precise locality, *Wilford!*

Lower Guinea. St. Thomas: Angolares, *Quintas!* near Lagoa Amelia and S. Pedro, 3900 ft., *Moller!*

48. **P. angularis,** *Reichb. f. in Flora,* 1867, 114. Plant 6 in. high. Pseudobulbs 2–4-leaved, ovate-oblong, 9 lin. long. Leaves oblong or linear-oblong, acute, 3–$3\frac{1}{2}$ in. long, 6–7 lin. broad. Scapes racemose, puberulous, few-flowered, 1 in. long. Bracts triangular-acuminate, $\frac{3}{4}$–$1\frac{1}{4}$ lin. long. Pedicels hairy, longer than the bracts,

3 lin. long. Flowers deep yellow. Dorsal sepal linear-ligulate, $1\frac{1}{2}$ lin. long; lateral broader than the dorsal. Petals linear, acute, $1\frac{1}{2}$ lin. long. Lip broadly dilated, trifid; side lobes triangular; front lobe longer than the side lobes, subretuse, apiculate; disc velvety, puberulous. Column very short. Chin conical, obtuse.

Lower Guinea. Angola: Pungo Andongo; terrestrial, on high, precipitous rocks at Pedro de Cazella and Pedro de Canbondo, rare, and not seen under 3400 ft., *Welwitsch*, 696!

A fruiting specimen collected on the Niger Delta, at Grand Bassa, by *Vogel!* seems allied to the present one, but the material is inadequate for satisfactory determination.

49. **P. simplex,** *Rendle in Journ. Bot.* 1895, 199. Plant about 6 in. high. Stems subcylindrical, moderately stout, about 3-leaved. Leaves oblong or oblong-lanceolate, subacute, $1\frac{3}{4}$–3 in. long, 5–7 lin. broad. Scapes about $1\frac{3}{4}$ in. long; racemes pubescent, few-flowered. Bracts lanceolate, acuminate, $1\frac{1}{2}$–2 lin. long. Pedicels 3 lin. long, Dorsal sepal ovate-oblong, acute, concave, $2\frac{1}{2}$ lin. long; lateral triangular-ovate, acuminate. Petals oblong-lanceolate, acuminate, 2 lin. long. Lip shortly unguiculate, trilobed, 2 lin. long; side lobes rounded; front lobe broadly ovate, apiculate; disc smooth with a narrow keel at the base. Column stout, $\frac{1}{2}$ lin. long. Chin saccate-oblong, obtuse, $1\frac{1}{2}$ lin. long.

Nile Land. British East Africa: Ruwenzori; Wimi, on rocks at the foot of the waterfall, 6200 ft., *Scott-Elliot*, 7827!

50. **P. confusa,** *Rolfe.* Plant very dwarf. Pseudobulbs approximate, ovoid, 4 lin. long, 1–2-leaved, the younger ones with two or three ovate, acute, protecting sheaths. Leaves spreading, oblong, subobtuse, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long, 3–4 lin. broad, narrowed at the base. Scapes erect, 1–$1\frac{1}{2}$ in. high, pubescent, 1 or few-flowered. Bracts ovate, acute, 1–$1\frac{1}{2}$ lin. long. Pedicels 2–3 lin. long. Dorsal sepal ovate-oblong, acute, 3 lin. long; lateral broadly triangular-ovate, acute, as long as the dorsal. Petals linear-oblong, acute, $2\frac{1}{2}$ lin. long. Lip 3 lin. long, broadly unguiculate, trilobed; side lobes rounded; front lobe broadly ovate; obtuse, somewhat concave; disc puberulous. Chin broadly saccate-oblong, about as long as the dorsal sepal. Column stout, 1 lin. long.—*P. capensis*, Kränzl. in Engl. Pfl. Ost-Afr. C. 155 (not Sond.).

Mozamb. Dist. German East Africa: Kilimanjaro, Kifinika Volcano, 9100 ft., *Volkens*, 1892!

Very different from *P. capensis*, Sond., with which Kränzlin has identified it.

51. **P. pachyglossa,** *Reichb. f. in Linnæa*, xli. 73. Plant 3–4 in. high. Pseudobulbs ovoid-oblong, $\frac{1}{2}$–$\frac{3}{4}$ in. long, 1–2-leaved. Leaves oblong, obtuse $\frac{3}{4}$–$1\frac{1}{4}$ in. long. Scapes erect, simple, few-flowered, about $1\frac{1}{2}$ in. long. Bracts triangular, acute, 1–$1\frac{1}{4}$ lin. long. Pedicels 3 lin. long. Dorsal sepal ovate-oblong, shortly acuminate, 3–$3\frac{1}{2}$ lin. long; lateral triangular-ovate, acuminate. Petals subspathulate-oblong, subobtuse, $2\frac{1}{2}$–3 lin. long. Lip trilobed, 3 lin. long, with a very short and

broad claw; side lobes rounded-auriculate, erect, retrorse; front lobe ovate, obtuse; disc with a slender, transverse callus near the base and a few short hairs behind. Column stout, $\frac{3}{4}$ lin. long. Chin saccate-oblong, obtuse, 2 lin. long.—Reichb. f. Xen. Orch. iii. 9, t. 207, fig. 1. *P. polyglossa*, Durand & Schinz, Conspec. Fl. Afr. v. 36.

Upper Guinea. Sierra Leone, cultivated specimens!

Only known to me from the original specimen, which flowered at Kew in 1872. It seems most allied to the South African *P. pubescens*, Reichb. f.

52. **P. zambesiaca,** *Rolfe in Kew Bulletin*, 1895, 192. Pseudobulbs elliptical or elliptic-oblong, subcompressed, 2–3-leaved, 5–9 lin. long. Leaves oblong or lanceolate-oblong, subobtuse, conduplicate at the base, glaucous and carinate beneath, $1\frac{1}{4}$–$3\frac{1}{4}$ in. long, 3–7 lin. broad. Scapes pubescent, 4–8-flowered, 2–3 in. long. Bracts broadly rhomboid-ovate, acuminate, pubescent, 2–3 lin. long. Pedicels 4 lin. long. Flowers greenish-yellow, with a deep brown spot on the front of the column, and some light purple veining on the side lobes of the lip. Sepals triangular-ovate, acute; dorsal 4 lin. long; lateral broader than the dorsal, carinate, 5 lin. long. Petals linear-oblong, bidenticulate, incurved, 3 lin. long. Lip recurved, trilobed; side lobes erect, rotundate; front lobe ovate, obtuse, 3 lin. long; disc with a broad, oblong, pubescent callus. Column stout, 1 lin. long. Chin saccate-oblong, 2 lin. long.

Mozamb. Dist. British Central Africa, cultivated specimen!

Described from a plant sent from British Central Africa by Mr. J. Buchanan, C.M.G., and flowered in the collection of Mr. James O'Brien in 1894.

53. **P. Johnstoni,** *Rolfe.* Plant 3–4 in. high. Pseudobulbs subglobose, 7–8 lin. long, 3–4-leaved. Leaves oblong, obtuse or emarginate, recurved, $1\frac{1}{2}$–$2\frac{1}{2}$ in. long, 6–8 lin. broad. Scapes subcompressed or ancipitous, whole inflorescence and flower villous, 2–3 in. long; racemes 1–$1\frac{1}{4}$ in. long, many-flowered. Bracts triangular-ovate, acute, spreading or recurved, 2–$2\frac{1}{2}$ lin. long. Pedicels 3 lin. long. Dorsal sepal ovate-lanceolate, acute, 5 lin. long; lateral triangular-ovate, carinate. Petals falcate-lanceolate, acute, 4 lin. long. Lip $3\frac{1}{2}$ lin. long, trilobed, reflexed; side lobes reniform-orbicular; front lobe elliptic-ovate, acute; disc villous, with a transverse fleshy tubercle at the base of the front lobe. Column stout, $1\frac{1}{2}$ lin. long. Chin saccate, obtuse, $2\frac{1}{2}$ lin. long. Capsule oblong, 8–9 lin. long.

Mozamb. Dist. British Central Africa: Mt. Mlanje: Lukubu and Palombi gorges, 4000 ft., *McClounie*, 34! Futchila ridge, in open unshaded places, 7500 ft., "found on a '*Yucca*' stem, in large clumps, small bulbs thickly together," *McClounie*, 2!

54. **P. lawrenceana,** *Kränzl. in Gard. Chron.* 1893, xiv. 150. Pseudobulbs subglobose. Leaves linear-oblong, acute, $3\frac{1}{2}$ in. long, 1 in. broad. Scapes 4–6 in. long, puberulous; racemes simple, few-flowered, distichous. Bracts large, rhomboid, acute, two-thirds as long as the pedicels, puberulous; apex reflexed. Flowers about 7 lin. diam. Dorsal sepal oblong, acute; lateral very broadly triangular, acute, carinate, yellowish-green. Petals as long as the dorsal sepal, linear-

lanceolate, acute, yellowish-green. Lip trilobed, pale lilac; side lobes dolabriform, rounded at the apex; front lobe much larger than the side lobes, nearly orbicular, sulcate in the middle, rugulose; apex deflexed; sides somewhat coarctate; disc with a triangular, densely pilose callus. Column very short.

Mozamb. Dist. British Central Africa, cultivated specimen!

Introduced by Mr. J. Buchanan, C.M.G., and flowered in the collection of Sir Trevor Lawrence in 1893. A specimen from Zanzibar, *Kirk*, appears to be very closely allied.

55. **P. Holstii,** *Kränzl. in Reichb. f. Xen. Orch.* iii. 150, *t.* 287, *fig.* 1. Plant about 6 in. high. Stems short, thickened at the base, forming an ovoid-oblong pseudobulb, $\frac{3}{4}$ in. long, 2-leaved. Leaves linear-lanceolate, subacute, 4–5 in. long, 3–4 lin. broad. Scapes 3–$3\frac{1}{2}$ lin. long, pubescent; racemes 6–10-flowered. Bracts triangular-ovate, acuminate, 1–2 lin. long. Pedicels $1\frac{1}{2}$–2 lin. long. Dorsal sepal ovate, acute, $2\frac{1}{2}$ lin. long; lateral triangular-ovate, acuminate. Petals oblong, acute, $2\frac{1}{4}$ lin. long. Lip strongly recurved, $1\frac{1}{2}$ lin. long; side lobes broadly rounded; front lobe triangular-ovate, acute; disc villous, some of the hairs subclavate, without callus. Column stout, 1 lin. long. Chin saccate-oblong, obtuse. Capsule oblong, 7 lin. long.—*P. kilimanjari*, Reichb. f. in Trans. Linn. Soc. ser. 2, ii. 349 (name only); Durand & Schinz, Conspec. Fl. Afr. 35 ("*kilimandjari*"); Rendle in Journ. Linn. Soc. xxx. 384; Kränzl. in Engl. Pfl. Ost-Afr. C. 155 ("*kilimandschari*").

Nile Land. British East Africa: Kilimanjaro Expedition, 40–60 miles from the coast, *Johnston!* Rabai Hills, near Mombasa, *Taylor!*

Reichenbach's name is most inappropriate, as the species was not found on Mt. Kilimanjaro at all, and as no description was published it cannot be recognised.

56. **P. Kirkii,** *Rolfe in Kew Bulletin*, 1895, 282. Pseudobulbs cæspitose, linear-oblong, subterete, 1-leaved, $1\frac{1}{4}$–2 in. long. Leaves sessile, linear-oblong, acute, 3–5 in. long, 7–10 lin. broad. Scapes slender, puberulous, sometimes slightly branched, few-flowered, base ancipitous, 2–3 in. long. Bracts triangular-lanceolate, acute. Pedicels 2–$2\frac{1}{2}$ lin. long. Dorsal sepal lanceolate-ovate, acute, $3\frac{1}{2}$ lin. long; lateral broadly triangular, carinate; apex subfalcate, acute. Petals lanceolate, acute, $3\frac{1}{2}$ lin. long. Lip trilobed, $3\frac{1}{4}$ lin. long; side lobes semioblong, very obtuse, erect; front lobe ovate, acute; disc pubescent, with a linear-oblong, fleshy, pubescent keel. Column stout, 1 lin. long. Chin oblong, obtuse, 4 lin. long.

Nile Land. British East Africa: Mombasa district, cultivated specimen, *Kirk!* Originally flowered at Kew in 1894.

57. **P. villosa,** *Rolfe in Kew Bulletin*, 1894, 393. Leaves linear-lanceolate, elongate, acute, 10 in. long, 5 lin. broad. Scapes 3 in. long, erect, villous; racemes many-flowered, whole inflorescence and flowers softly villous-pubescent. Bracts triangular-ovate, acuminate, carinate, villous, 4 lin. long. Pedicels villous, 3 lin. long. Flowers pale whitish-

green; keel of the lateral sepals dull purple; lip white with minute purple spots on the disc and a light yellow line between the side lobes. Sepals villous; dorsal ovate or ovate-lanceolate, acute, 3 lin. long; lateral triangular-ovate, acuminate, 4 lin. long, slightly keeled outside. Petals subspathulate-oblong, acute, $2\frac{1}{2}$ lin. long. Lip recurved, trilobed, 2 lin. long; side lobes erect, semiovate-orbicular; front lobe ovate, acuminate; disc with a slightly thickened line or obscure fleshy keel between the side lobes. Column stout, $\frac{1}{2}$ lin. long. Chin saccate-oblong, obtuse, $1\frac{1}{2}$ lin. long.

Mozamb. Dist. British Central Africa, cultivated specimen!

Described from a plant introduced by Mr. J. Buchanan, C.M.G., which flowered in the collection of Mr. James O'Brien, in 1890. Remarkable for its softly villous-pubescent inflorescence, and the colour of the flowers which resembles the pale green of some species of *Sphagnum*.

58. **P. dixantha,** *Reichb. f. in Gard. Chron.* 1882, xvii. 294. Stem somewhat terete, 2-leaved, straight. Leaves linear-ligulate, acute. Peduncle with three yellow sheaths; rhachis velvety, lax-flowered; racemes simple. Bracts triangular, shorter than the pedicels. Pedicels puberulous. Flowers ochre-coloured; lip with purple side lobes and dark yellow disc. Dorsal sepal linear-triangular; lateral triangular, acuminate. Petals linear-falcate, acute. Lip cuneate-dilated from a broad base, pilose; side lobes quadrate; front lobe triangular, apiculate; disc with an orange, semiquadrate callus in the upper part. Chin large, obtuse.

West Tropical Africa. Without locality.

Only known to me from the original description, but apparently near *P. affinis*, Lindl., which the flowers are said to equal in size. It flowered in the collection of Mr. T. Christy, in 1882.

59. **P. affinis,** *Lindl. Gen. & Sp. Orch.* 73 (*not elsewhere*). Pseudobulbs dorsally flattened, suborbicular, approximate, 1–$1\frac{3}{4}$ in. diam., 2-leaved. Leaves oblanceolate-oblong, acute or shortly acuminate, $3\frac{1}{2}$–7 in. long, 1–$1\frac{1}{2}$ in. broad. Scapes 6–12 in. high, villous; racemes simple or a little branched, 4–7 in. long. Bracts ovate, acuminate, distichous, 4–6 lin. long. Pedicels 2 lin. long. Dorsal sepal ovate-oblong, subobtuse, $2\frac{1}{2}$–3 lin. long; lateral obliquely ovate-oblong, subobtuse. Petals subspathulate-oblong, subobtuse, $2\frac{1}{2}$–3 lin. long. Lip trilobed, 3–$3\frac{1}{2}$ lin. long; side lobes broadly rounded; front lobe ovate-oblong, obtuse; disc with a linear, fleshy keel, which is pubescent at the sides. Column stout, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. long. Chin saccate, 2 lin. long. —*P. bracteosa*, Lindl. in Bot. Reg. 1840, Misc. 48; Bot. Mag. t. 4161; Reichb. f. in Walp. Ann. vi. 642.

Upper Guinea. Sierra Leone, *Don!* cultivated specimens, *Loddiges! Whitfield!* near Wallia, *Scott-Elliot*, 4627B! Ashanti: Brafu Edru, on trees, *Cummins!* Lagos, *Millen!* Lower Niger: Onitsa, *Barter*, 1863!

This species has been confused with *P. leonensis*, Reichb. f.

60. **P. cæspitifica,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 155. Plant scarcely 4 in. high. Pseudobulbs narrowly cylindrical, 1-leaved, densely

cæspitose. Leaves linear, obtuse, apiculate. Scapes very short, 1-flowered. Flowers scarcely 2 lin. broad, bright yellow. Dorsal sepal narrowly ovate, acute, concave; lateral very broadly ovate-triangular, acute. Petals linear, a little broader above, acute. Lip clawed, broadly cuneate, trilobed; side lobes large, oblong-ovate, obtuse, somewhat curved; front lobe triangular, acute; disc wholly furfuraceous, shining at the apex.—Kränzl. in Engl. Jahrb. xxii. 21.

Mozamb. Dist. German East Africa: Usambara; Mbaramu, on tree trunks in old forests, *Holst*, 2481.

The habit is described as that of a small *Masdevallia*. I have not seen it.

61. **P. grandiflora,** *Lindl. in Bot. Mag. t.* 3707. Pseudobulbs cylindrical, slender, 3–4 in. long, 1-leaved. Leaves linear-oblong, obtuse, 5–8 in. long, 5–10 lin. broad. Scapes 3–3½ in. long, 1 or few-flowered. Bracts triangular-ovate, acuminate, 2–2½ lin. long. Pedicels 5 lin. long. Flowers green, with a few brown spots on the lateral sepals; lip white. Dorsal sepal triangular, acuminate, 7 lin. long; lateral very broadly triangular, acuminate, much larger than the dorsal. Petals subspathulate-lanceolate, acute, 4½ lin. long. Lip unguiculate, 9–10 lin. long, trilobed; side lobes roundish-oblong; front lobe ovate, orbicular, obtuse, obscurely crenulate; disc a little fleshy and puberulous. Column very short and stout. Chin saccate-oblong, obtuse, ¾ in. long.—*Limodorum cucullatum*, Afzel. ex Sw. in Vet. Acad. Handl. Stockh. 1800, 243 (name only); Pers. Syn. Pl. ii. 521; Lindl. Gen. & Sp. Orch. 185; *Polystachya cucullata*, Durand & Schinz, Conspect. Fl. Afr. v. 34; *Dendrobium galeatum*, Sw. in Schrad. Neues Journ. i. 96; Pers. Syn. Pl. ii. 523; *Bulbophyllum galeatum*, Lindl. Gen. & Sp. Orch. 57; *Polystachya galeata*, Reichb. f. in Walp. Ann. vi. 637; *P. macrantha*, Lindl. in Bot. Reg. 1839, Misc. 36 (in note).

Upper Guinea. Sierra Leone: Fig-tree Cemetery, *Barter!* Makunde Limba, *Scott-Elliot*, 5719! and without locality, *Afzelius! Allcard!* Lagos, cultivated specimen!

62. **P. reflexa,** *Lindl. in Bot. Reg.* 1841, *Misc.* 18. Pseudobulbs subterete, slender, 2 in. or more long, 1-leaved. Leaves linear-oblong, obtuse, 5½ in. long, 10–11 lin. broad. Scapes ¾–1 in. long, 1– or few-flowered. Bracts ovate-lanceolate, acute, recurved, obtuse, 2 lin. long. Pedicels 4 lin. long. Flowers white with a faint tinge of pink. Dorsal sepal ovate, acuminate, 5 lin. long; lateral broadly ovate, acuminate. Petals subspathulate-lanceolate, acute, 4 lin. long. Lip 8 lin. long, broadly unguiculate and crenulate, tinged with green, abruptly reflexed in the middle, and with a yellow cushion of jointed hairs below, a little constricted in the middle; front lobe dilated, obovate, suborbicular, obtuse or apiculate. Column very short and stout. Chin saccate, obtuse, 8 lin. long.—Reichb. f. in Walp. Ann. vi. 637.

Upper Guinea. Sierra Leone, *Whitfield!*

Only known to me from a garden specimen; it is allied to *P. grandiflora*, Lindl., but readily distinguished by the very different lip.

63. **P. Preussii,** *Kränzl. in Engl. Jahrb.* xvii. 51. Plant 3–6 in. high. Pseudobulbs with an ovoid or ovoid-oblong base, $\frac{1}{2}$–1 in. long, narrowed above, 2–4-leaved. Leaves oblong-linear, obtusely bidentate, 1–3 in. long, 3–5 lin. broad. Racemes simple, $\frac{3}{4}$–$1\frac{3}{4}$ in. long. Bracts triangular-ovate, acuminate, $\frac{3}{4}$–$1\frac{1}{4}$ in. long. Pedicels $1\frac{1}{2}$–2 lin. long. Dorsal sepal ovate-oblong, acute, $2\frac{1}{2}$ lin. long; lateral broadly triangular-ovate, acuminate. Petals lanceolate, acute, $2\frac{1}{4}$ lin. long. Lip $3\frac{1}{2}$ lin. long, spathulate, with a long, pubescent claw; limb suborbicular, apiculate; disc with a large 4-lobed callus at the base of the limb. Column stout, $1\frac{1}{4}$ lin. long. Chin oblong, obtuse, $2\frac{1}{4}$ lin. long.

Upper Guinea. Cameroon Mountains: Buea, 6800–8200 ft., epiphytic on *Hypericum, Leucothoe,* &c., *Preuss,* 934! 1021!

The remarkable callus indicates a close affinity with *P. alpina,* Lindl.

64. **P. alpina,** *Lindl. in Journ. Linn. Soc.* vi. 131; vii. 220. Plant only about 2 in. high. Stems dwarf, slightly swollen at the base, 2-leaved. Leaves linear-oblong, unequally bidentate, 1–$1\frac{1}{4}$ in. long, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. broad. Scapes short, hispidulous, 1-flowered. Bracts ovate, acuminate, $\frac{3}{4}$ lin. long. Pedicels 2 lin. long. Dorsal sepal ovate-oblong, obtuse, concave, 2 lin. long; lateral triangular-ovate, acute. Petals lanceolate, acute, 2 lin. long. Lip $3\frac{1}{2}$ lin. long, unguiculate; claw with incurved, ciliate margin; limb broadly ovate, acute, or apiculate; callus large, fleshy, 6-lobed, flat, situated at the base of the limb.—Engl. Hochgeb. Fl. Trop. Afr. 187.

Upper Guinea. Fernando Po, 6000 ft., on trees, *Mann,* 647!

A very small plant with solitary flowers, dark red-brown when dried, remarkable for the large, fleshy, 6-lobed callus.

65. **P. disticha,** *Rolfe in Bolet. Soc. Brot.* ix. 139. Plant 4 in. high. Pseudobulbs narrow, 2 in. long, 1-leaved. Leaves linear-oblong, obtuse, 2 in. long, $\frac{1}{4}$ in. broad. Racemes simple, 8–10-flowered. Bracts distichous, equitant, triangular, acute, rigid, 1 lin. long. Pedicels rugose, 3 lin. long. Dorsal sepal ovate-oblong, obtuse, $1\frac{1}{2}$ lin. long; lateral broadly ovate, subacute. Petals oblong, obtuse, $1\frac{1}{2}$ lin. long. Lip entire, rounded-oblong, obtuse or apiculate, as long as or longer than the sepals; disc pubescent. Column stout.

Lower Guinea. St. Thomas, *Quintas,* 28!

66. **P. caloglossa,** *Reichb. f. Otia Bot. Hamb.* ii. 111. Plant 10–12 in. high. Stems cylindrical, elongate, 4-leaved. Leaves lanceolate-oblong, acuminate, $2\frac{1}{2}$–4 in. long, 7–12 lin. broad. Panicles slightly branched, about $1\frac{1}{2}$ in. long, glabrous; rhachis very flexuose. Bracts distichous, conduplicate, triangular, acute, $1\frac{1}{4}$–2 lin. long. Pedicels 3 lin. long. Dorsal sepal ovate-oblong, acuminate, 5 lin. long; lateral broadly triangular-ovate, acuminate. Petals elliptic-lanceolate, acute or apiculate, 4 lin. long. Lip 4 lin. long, broadly unguiculate, limb reniform, orbicular, obtuse or apiculate; disc glabrous; callus

broadly triangular-oblong, slightly bidentate, dorsally flattened. Column stout, $1\frac{1}{4}$ lin. long. Chin oblong, obtuse, $3\frac{1}{2}$ lin. long.

Upper Guinea. Cameroon Mountains, 5000 ft., *Mann*, 2110!

67. **P. elastica,** *Lindl. in Journ. Linn. Soc.* vi. 131. Plant 6 in. high. Stems short, slightly thickened at the base, 2–3-leaved. Leaves linear-lanceolate, subacute, 2–3 in. long, $2–2\frac{1}{2}$ lin. broad. Scapes 6 in. long, pubescent; racemes simple, few-flowered. Bracts very broadly ovate, acute or apiculate, $\frac{3}{4}$–1 lin. long. Pedicels 5 lin. long. Dorsal sepal ovate-oblong, acute, $3\frac{1}{2}$ lin. long; lateral broadly and obliquely triangular-ovate, mucronate. Petals subspathulate-oblong, obtuse or apiculate, $3\frac{1}{2}$ lin. long. Lip doubly curved into the form of an **S**, trilobed, $\frac{1}{2}$ in. long; the basal third broadly unguiculate, with a high callus, narrow and apiculate in front; the middle third oblong, covered with a longitudinally-grooved hairy cushion, and bearing a pair of rounded, crenulate side lobes near its apex; the apical third incurved, obovate, truncate, very concave, and with an apiculate tooth on the back at its base. Column stout, $1\frac{1}{2}$ lin. long. Chin triangular-oblong, $5\frac{1}{2}$ lin. long.—*Dendrobium roseum*, Sw. in Schrad. Neues Journ. i. 97; Pers. Syn. Pl. ii. 523; Lindl. Gen. & Sp. Orch. 92.

Upper Guinea. Sierra Leone: Bagru River, *Mann*, 902! and without precise locality, *Afzelius*!

A very remarkable species with a large mass of thin, flat roots like those of the leafless *Angræcums*. Lindley says that its labellum, which is a long, narrow, yellow body with an inflexed terminal lobe, is thrown back forcibly when the flower expands, so as to hang down over the hood formed by the united lateral sepals. By what mechanical contrivance this is effected I have been unable to determine. In the bud state the tooth on the back of the lip is exactly opposite to the apex of the sepals and petals, and the concave front lobe of the lip is tucked away behind the column in a remarkable manner.

68. **P. fusiformis,** *Lindl. Bot. Reg.* 1824, *sub t.* 851. Plant 6–9 in. high. Pseudobulbs fusiform-oblong, superposed, 2–3 in. long, 3–4-leaved. Leaves oblong or oblong-lanceolate, subacute, 2–5 in. long, 4–7 lin. broad. Panicles $2–2\frac{1}{2}$ in. long. Bracts triangular, acuminate, $\frac{1}{2}$–1 lin. long. Pedicels 2 lin. long. Dorsal sepal ovate, apiculate, 1 lin. long; lateral resembling the dorsal, but broader. Petals oblong or subspathulate-oblong, subacute, 1 lin. long. Lip 1 lin. long, unguiculate, trilobed; side lobes rounded-oblong, obtuse: front lobe ovate, subobtuse or apiculate; disc subglabrous, without a callus. Column stout, $\frac{1}{3}$ lin. long. Chin saccate, obtuse, 1 lin. long. Capsule oblong, 4 lin. long.—Kränzl. in Engl. Pfl. Ost-Afr. C. 155. *Dendrobium fusiforme*, Thou. Orch. Iles Afr. t. 86.

Mozamb. Dist. German East Africa: Usambara; Mascheua (ex *Kränzlin*).

Also found in Madagascar, Mauritius, Reunion, and the Seychelles. I have seen no Tropical African specimens, and the description is made from Mascarene ones.

69. **P. superposita,** *Reichb. f. Otia Bot. Hamb.* ii. 111. Pseudobulbs slender, cylindric, superposed, each arising from above the middle of the previous one, $2–3\frac{1}{2}$ in. long, 3–4-leaved. Leaves linear

or oblong-linear, 1–3 in. long, 2–3½ lin. broad. Scapes slender, more or less branched; panicles ¾–1¼ in. long, often somewhat deflexed, setose-hispid. Bracts lanceolate-acuminate from a broader base, ¾–1 lin. long. Pedicels 1–1¼ lin. long. Dorsal sepal ovate, obtuse, concave, 1 lin. long; lateral broadly ovate, obtuse. Petals subspathulate-oblong, apiculate, incurved, 1 lin. long. Lip trilobed, ¾ lin. long; side lobes erect, oblong, subobtuse; front lobe ovate-suborbicular, obtuse, somewhat recurved. Column stout, ⅓ lin. long. Chin saccate-oblong, obtuse.

Upper Guinea. Cameroon Mountains, 5000 ft., *Mann*, 2125!

70. **P. spatella,** *Kränzl. in Engl. Jahrb.* xix. 251. Stems slender, scarcely thickened at the base, 2-leaved. Leaves linear-lanceolate, 4 lin. long, 4 lin. broad; apex acutely bilobed. Scapes slender, nodding, longer than the leaves; racemes short, few-flowered; rhachis slightly flattened, setulose. Bracts long, setaceous from a triangular base, shorter than the ovary. Flowers 5 lin. long, 2 lin. broad. Dorsal sepal lanceolate, concave; lateral broadly oblong, subfalcate, acute. Petals narrowly linear, acute, of the same length as the sepals. Lip with a long, linear, densely setose claw, thence suddenly dilated into a three-lobed, sparsely setose limb; side lobes oblong, obtuse; front lobe orbicular, umbonate in the middle, and with some thickened lines radiating from it to the margin. Column short, foot setose. Chin cylindric, as long as the rest of the flower.—Kränzl. in Engl. Pfl. Ost-Afr. C. 155.

Nile Land. British East Africa: Ruwenzori, in forest, 8200 ft., *Stuhlmann*, 2334.

Only known to me from the original description.

71. **P. Elliotii,** *Rendle in Journ. Bot.* 1895, 198. Plant 6–9 in. high. Stems slender, superposed, 1–2-leaved. Leaves linear or linear-lanceolate, acute or subacute, 2½–4 in. long, 2½–3 lin. broad. Scapes slender, 2–2¼ in. long, setulose; racemes simple, few-flowered. Bracts triangular-lanceolate, acuminate, 1 lin. long. Pedicels 1–2 lin. long. Dorsal sepal ovate-lanceolate, acute, 2¼ in. long; lateral triangular-ovate, acuminate. Petals lanceolate, subacute, 2 lin. long. Lip 4 lin. long, unguiculate, trilobed; side lobes elliptic-oblong, obtuse; front lobe ovate-orbicular, apiculate; base of limb with a chin-like swelling on the lower surface; disc smooth, but with a slightly thickened callus between the side lobes. Column stout, 1½ lin. long. Chin oblong, obtuse, 2¼ lin. long.

Nile Land. British East Africa: Ruwenzori, 8000 ft., on tree trunks, *Scott-Elliott*, 7796!

72. **P. ruwenzoriensis,** *Rendle in Journ. Bot.* 1895, 199. Plant 6 in. high. Pseudobulbs subcylindric, superposed, 1–1¼ in. long, 2-leaved. Leaves linear or linear-lanceolate, obtuse, 1–1¼ in. long, 1½–2 lin. broad. Scapes slender, 1 in. long, puberulous, few-flowered. Bracts ovate, acuminate, ¾ lin. long. Dorsal sepal ovate-oblong, acute,

2 lin. long; lateral triangular-ovate, acuminate. Petals linear-lanceolate, acute, $2\frac{1}{2}$ lin. long. Lip $4\frac{1}{2}$ lin. long, unguiculate; limb trilobed; side lobes broadly semiovate, obtuse, with a plication at the base; front lobe ovate, acute; disc smooth, with a transverse, crenulate, membranous callus between the side lobes. Column stout, $1\frac{1}{2}$ lin. long. Chin oblong, obtuse, $2\frac{1}{2}$ lin. long. Capsule oblong, triquetrous, 4 lin. long.

Nile Land. British East Africa: Ruwenzori, Butagu, 9000 ft., among heather, *Scott-Elliot*, 8617!

73. **P. bulbophylloides,** *Rolfe in Kew Bulletin*, 1891, 199; 1892, *App.* 41. Rhizome creeping. Pseudobulbs 4–7 lin. apart, ovoid-globose, $2\frac{1}{2}$–3 lin. long, 2-leaved. Leaves elliptic-oblong, minutely bidenticulate, somewhat fleshy, 4–7 lin. long, 2–$2\frac{1}{2}$ lin. broad. Scapes lateral, slender, 1–$1\frac{3}{4}$ in. long; racemes simple, usually few-flowered. Bracts ovate, acute or apiculate, $\frac{3}{4}$–$1\frac{1}{4}$ lin. long. Flowers subsessile. Dorsal sepal ovate-oblong, acute, concave, $1\frac{1}{2}$ lin. long; lateral triangular-ovate, acute. Petals reduced to a very minute tubercle. Lip $1\frac{1}{2}$ lin. long, oblong, somewhat trilobed at the apex; side lobes minute; front lobe larger, ovate, with a recurved, subobtuse apex; disc smooth. Column stout, $\frac{1}{2}$ lin. long. Chin saccate-oblong, obtuse, 1 lin. long.—*Dendrobium pumilum*, Sw. in Schrad. Neues Journ. i. 97; Pers. Syn. Pl. ii. 523. *Bulbophyllum? pumilum*, Lindl. Gen. & Sp. Orch. 54. *Bulbophyllum apetalum*, Lindl. in Journ. Linn. Soc. vi. 127.

Upper Guinea. Sierra Leone: Bagru River, *Mann!* and without precise locality, *Afzelius!* Niger Delta: Brass River, on oil palms, *Barter*, 72!

The habit of this species is precisely that of a small creeping *Bulbophyllum*, to which genus Lindley referred it, remarking: "This singular little species has flowers like miniatures of *Aconitum Lycoctonum*. For petals there are only two minute rudiments; the lip resembles that of some *Polystachyas*, and the column has two deep, fleshy, purplish cheeks."

74. **P. micropetala,** *Rolfe*. Pseudobulbs $\frac{3}{4}$–1 in. apart, on a slender, creeping rhizome, oblong or ovoid-oblong, 3–5 lin. long, 2-leaved. Leaves oblong or linear-oblong, obtuse, 5–8 lin. long, $1\frac{1}{2}$ lin. broad. Scapes slender, suberect, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long; racemes $\frac{1}{2}$ in. long, few-flowered; rhachis flexuous. Bracts distichous, ovate, subacute, $\frac{1}{2}$ lin. long. Dorsal sepal ovate, subacute, concave, $\frac{1}{2}$ lin. long; laterals very broadly triangular-ovate, subacute, $\frac{3}{4}$ lin. broad. Petals represented by two minute bristles. Lip $\frac{3}{4}$ lin. long, cuneate-oblong at the base, trilobed; side lobes extending into a pair of triangular, acute arms; front lobe nearly obsolete; disc smooth. Column stout, $\frac{1}{3}$ lin. long, with a pair of short, truncate arms. Chin $\frac{1}{3}$ lin. long, saccate, obtuse.—*Bulbophyllum micropetalum*, Lindl. in Journ. Linn. Soc. vi. 127.

Upper Guinea. Fernando Po, 4000 ft., *Mann*, 644!

A peculiar little plant allied to the preceding. The petals are much reduced, and are easily overlooked.

16. **SACCOLABIUM**, Blume; Benth. et Hook. f. Gen. Pl. iii. 578.

Sepals subequal, free, spreading, sometimes fleshy. Petals similar to the sepals or nearly so. Lip affixed to the base of the column, and continuous with it, saccate or calcarate at the base; side lobes erect, usually small, sometimes nearly obsolete; front lobe erect or spreading, oblong or rounded, sometimes very fleshy, generally shorter than the spur; disc smooth or with a small appendage at the mouth of the spur. Column short, broad, sometimes very broad, without wings, and footless; clinandrium truncate or nearly so. Anther terminal, operculate, incumbent, convex, obtuse or subacute, 1-celled or imperfectly 2-celled; pollinia 2, subglobose, entire, sulcate or bipartite, attached to a slender, linear or clavate stipes, with small squamiform gland. Capsule globose, oblong, or rarely elongate, with slender or prominent ribs.—Epiphytic herbs. Stems short or somewhat elongate, leafy, not thickened into pseudobulbs. Leaves distichous, spreading, coriaceous, fleshy, or rarely slender, flat or rarely terete, articulated to a persistent sheath. Peduncles lateral, simple or branched. Flowers small or medium-sized, arranged in lax or dense racemes or panicles. Bracts small.—*Acampe*, Lindl. Fol. Orch., Acampe, 1.

A genus of over 60 species, widely diffused in India and Malaya, with a few Polynesian representatives, one Australian, and a few in Tropical Africa and Madagascar. The African species all belong to the section *Acampe* (formerly considered a distinct genus), characterised by its very fleshy lip.

Spur conical	1. *S. pachyglossum.*
Spur rounded	2. *S. mombasense.*

1. **S. pachyglossum,** *Rolfe.* Stem stout, with thick roots. Leaves ligulate, unequally bilobed at the apex, 9½ in. long, 14 lin. broad. Panicles unequal. Sepals and petals cuneate or oblong-ligulate, subacute. Lip trilobed; side lobes very dwarf, semioblong, angled in front; front lobe quadrate, asperulous, with a pair of keels on the disc, and another dwarf one near the mouth of the spur; spur conical, small. —*Acampe pachyglossa*, Reichb. f. Otia Bot. Hamb. ii. 76.

Nile Land. British East Africa: Mombasa, *Hildebrandt*, 1991!

2. **S. mombasense,** *Rolfe.* Plant glabrous, stout. Leaves oblong-ligulate, 8 in. long, 1¼ in. broad; apex obliquely emarginate. Spikes shortly racemose or somewhat paniculate, 3–4 in. long. Bracts short, semiorbicular-ovate. Flowers thick, fleshy. Dorsal sepal spathulate-ligulate, obtuse, 5 lin. long, 2½ lin. broad; lateral similar to the dorsal, 2 lin. broad, oblong-ligulate. Petals much like the sepals but more spathulate, 1¾ lin. long. Lip 4½–5 lin. long, trilobed; side lobes short, rounded, pubescent above; front lobe thick, broadly 5-angled, obtuse, 2 lin. long, very papillose on the margin and upper face; disc with a lamelliform keel between the side lobes, terminating in an obtuse

tooth; spur roundly gibbous. Column stout, 1 lin. long.—*Acampe mombasensis*, Rendle in Journ. Linn. Soc. xxx. 386.

Nile Land. British East Africa: Mombasa Island, *Taylor!*

Near the preceding, but the leaf is less linear, the flowers nearly twice as large, and the spur rounded, not conical.

17. **ANGRÆCUM**, Bory, Voy. i. 359, t. 19; Benth. et Hook. f. Gen. Pl. iii. 583, in part.

Sepals and petals subequal, free, spreading or subconnivent. Lip affixed to the base of the column and continuous with it, produced at the base into a long, often very long spur; side lobes small or obsolete, at the sides of the spur; limb spreading or erect, entire or trilobed. Column very short, broad, concave in front, without wings and footless; clinandrium truncate, entire. Anther terminal, operculate, incumbent, convex, often produced in front, scarcely 2-celled; pollinia 2, globose, sulcate; stipes single, clavate or slender; gland squamiform, simple. Capsule oblong or fusiform.—Epiphytic herbs; stems leafy or rarely leafless, long or short, not thickened into pseudobulbs. Leaves distichous, coriaceous or fleshy, articulated to a persistent sheath. Peduncles lateral, simple. Flowers often large or medium-sized, racemose or subsolitary. Bracts usually small.—*Radinocion*, Ridl. in Bolet. Soc. Brot. v. 200. *Calyptrochilum*, Kränzl. in Engl. Jahrb. xxii. 30.

A genus of 80 or 90 species, widely diffused in Continental Africa and the Mascarene Islands, with an outlying species in Japan. The genus is here limited to those with a single stipes to the pollinia, which is the only absolute character by which it can be separated from the allied genera.

Stems leafy.

*Stems very short; leaves basal.

Caudicles of pollinia 2-armed from the middle (unknown in 2).

Racemes 6–10 in. long . . . . . 1. *A. flabellifolium.*

Racemes 3 in. long . . . . . 2. *A. brachycarpum.*

Caudicles of pollinia simple, wherever known.

Leaves broader or not narrower at the apex than at the base (unknown in 21, see also 2 above).

†Sepals and petals 4–12 lin. long.

Petals ovate-lanceolate, elliptic-lanceolate, or narrow.

Spur short, with broadly infundibular mouth . . . . . 3. *A. Galeandræ.*

Spur long and slender.

Column more or less stout, not half as long as the sepals.

Racemes 2–5 flowered, usually erect or suberect.

Petals elliptic, subacute . . 4. *A. alcicorne.*

Petals broadly lanceolate, acuminate . . . . . 5. *A. Kirkii.*

Petals narrowly lanceolate, acuminate . . . . . 6. *A. rohlfsianum.*

Racemes many-flowered, usually pendulous.
Spur 4–8 in. long.
Spur a little thicker near the apex. . . . . 7. *A. kotschyanum.*
Spur not thickened at the apex 8. *A. Grantii.*
Spur 3 in. or less long.
Sepals and petals elliptic-oblong, apiculate . . 9. *A. pachyurum.*
Sepals and petals lanceolate, acuminate.
Spur 4–5 in. long . . 10. *A. avicularium.*
Spur $1\frac{1}{2}$–$2\frac{1}{4}$ in. long.
Sepals and petals broadly lanceolate . . 11. *A. bilobum.*
Sepals and petals narrowly lanceolate . . 12. *A. Batesii.*
Spur under 1 in. long.
Leaves unequally bilobed, upper lobe subacute . 13. *A. flexuosum.*
Leaves obscurely bilobed or obliquely bidentate . 14. *A. henriquesianum.*
Column long and slender.
Spur filiform, with narrow apex . 15. *A. arachnopus.*
Spur filiform with clavate apex . 16. *A. gracillimum.*
Petals obovate, subobtuse or apiculate.
Bracts ovate-oblong, 2–$2\frac{1}{2}$ lin. long . 17. *A. rhodostictum.*
Bracts triangular, minute . . . 18. *A. luteo-album.*
††Sepals and petals $1\frac{1}{2}$–$2\frac{1}{2}$ lin. long.
Spur longer than the sepals and petals.
Bracts shorter than the pedicels.
Leaves $3\frac{1}{4}$–4 in. long, 6–8 lin. broad . 19. *A. Rohrii.*
Leaves 2–3 in. long, 3–$3\frac{1}{2}$ lin. broad . 20. *A. Quintasii.*
Bracts longer than the pedicels . . 21. *A. malangeanum.*
Spur shorter than the sepals and petals.
Leaves 5–8 lin. broad . . . 22. *A. dives.*
Leaves $2\frac{1}{2}$ lin. broad . . . 23. *A. occidentale.*
Leaves broader at the base than at the apex . 24. *A. christyanum.*
**Stems more or less elongated, sometimes climbing.
†Lip entire or with very short or obtuse side lobes.
Lip $\frac{3}{4}$ in. or more long.
Lip elliptic-lanceolate.
Western species . . . . . 25. *A. Ellisii var. occidentale.*
Eastern species . . . . . 26. *A. Thomsoni.*
Lip suborbicular-ovate or nearly quadrate.
Racemes long, many-flowered . . . 27. *A. Giryamæ.*
Racemes short, 2–3-flowered.
Leaves elliptical . . . . . 28. *A. eichlerianum.*
Leaves linear . . . . . 29. *A. schœllerianum.*
Lip less than $\frac{1}{2}$ in. long (unknown in 35).
Bracts spreading and rather crowded.
Spur inflated at the apex (unknown in 35).
Bracts $2\frac{1}{2}$–$3\frac{1}{2}$ lin. long . . . 30. *A. imbricatum.*
Bracts $1\frac{1}{2}$–2 lin. long.

Leaves ovate-oblong.
Spur as long as the limb of the lip (Western species) . . 31. *A. Moloneyi.*
Spur shorter than the limb of the lip (Eastern species) . . 32. *A. mombasense.*
Leaves linear-oblong . . . 33. *A. lagosense.*
Bracts scarcely $\frac{1}{2}$ lin. long.
Capsule elliptic-globose (Western species) . . . . . 34. *A. clavatum.*
Capsule oblong (Eastern species) . 35. *A. Wakefieldii.*
Spur linear . . . . . 36. *A. lepidotum.*
Bracts erect, tubular at the base, distant . 37. *A. schimperianum.*
††Lip 3-lobed, with narrow, acute, or fimbriate side lobes.
Flowers in axillary fascicles . . . . 38. *A. Scottellii.*
Flowers racemose.
Side lobes of lip entire.
Spur clavate . . . . . 39. *A. armeniacum.*
Spur subfiliform.
Bracts 2 lin. or more apart . . . 40. *A. tridactylites.*
Bracts $1\frac{1}{4}$ lin. apart . . . . 41. *A. Whitfieldii.*
Side lobes of lip fimbriate . . . . 42. *A. fimbriatum.*
Stems leafless or leaves disappearing very early.
Stemless or nearly so.
Roots smooth.
Spur not or scarcely 2 lin. long.
Segments $1\frac{1}{2}$ lin. long . . . . . 43. *A. guyonianum.*
Segments 1 lin. long . . . . . 44. *A. Smithii.*
Segments $\frac{1}{2}$–$\frac{3}{4}$ lin. long . . . . 45. *A. Chiloschistæ.*
Spur 4–5 lin. long . . . . . 46. *A. cæspitosum.*
Roots verrucose . . . . . 47. *A. megalorhizum.*
Stems elongate or climbing . . . . 48. *A. aphyllum.*

1. **A. flabellifolium,** *Rolfe.* Leaves obovate, obtusely bilobed, sometimes crenate, 2–$5\frac{1}{2}$ in. long, $\frac{3}{4}$–$1\frac{3}{4}$ in. broad; base attenuate. Bracts broadly ovate-oblong, obtuse, 2–$2\frac{1}{2}$ lin. long. Pedicels $1\frac{1}{2}$ in. long. Racemes elongate, secund, 6–10 in. long. Sepals and petals ovate-lanceolate, acuminate, 8–9 in. long. Lip similar to the petals; spur slender, 6–7 in. long. Pollinia with linear caudicle, extended from the middle into two arms. Rostellum elongate, simple. Capsule linear, $4\frac{1}{2}$–$5\frac{1}{2}$ in. long.—*Aerangis flabellifolia*, Reichb. f. in Flora, 1865, 191.

Lower Guinea. Angola: Golungo Alto, cataract of the Cuango rivulet, rare, *Welwitsch*, 657! Shady woods of Serra de Alta Queta, *Welwitsch*, 742!

I have been unable to examine the pollen of this species, but fail to see how it can be separated from *Angræcum*.

2. **A. brachycarpum,** *Reichb. f. in Walp. Ann.* iii. 573 (*in note*). Stems short, erect, 2 in. long; roots numerous. Leaves approximate, about 6, obovate-oblong, coriaceous, 2–$5\frac{1}{2}$ in. long, $\frac{3}{4}$–$1\frac{1}{4}$ in. broad; apex broader and deeply bilobed; lobes very obtuse, unequal; base distinctly attenuate. Scapes lateral, naked, simple, 3 in. high; racemes 4–5-flowered. Bracts amplexicaul, very obtuse, concave, 3 lin. long.

Capsule linear-oblong, 2½–5 in. long, sometimes crowned with the withered perianth; the slender spur 2–3 in. long.—*Dendrobium? brachycarpum*, A. Rich. Tent. Fl. Abyss. ii. 282; Reichb. f. in Flora, 1865, 191; *Aerangis brachycarpa*, Durand & Schinz, Conspect. Fl. Afr. v. 50; *Angræcum bilobum*, Engl. Hochgeb. Trop. Afr. 187 (not of Lindl.); Schweinf. in Bull. Herb. Boiss. ii. App. ii. 90.

Nile Land. Abyssinia: Wogera in subalpine valleys, *Schimper*, 1314! Begemeder; Valley of the River Reb, 6500 ft., *Schimper*, 1470! Eritrea: Ginda Valley, 3250–4900 ft., *Schweinfurth*, 2144!

A very distinct species, only known from fruiting specimens, and doubtfully placed as an ally of the preceding by Reichenbach.

3. **A. Galeandræ,** *Reichb. f. in Flora*, 1865, 189. Stems very short, 4–5-leaved. Leaves narrowly cuneate, 3–7 in. long, 4–14 lin. broad; apex shortly and unequally bilobed. Scapes deflexed or pendulous, 3–6 in. long, 2–8-flowered. Bracts ovate-oblong, obtuse, 2–3 lin. long. Pedicels 6–7 lin. long. Sepals and petals linear-oblong, obtuse, 7–8 lin. long. Lip 1½ in. long, large and funnel-shaped, very broad, obscurely trilobed in front; spur clavate, 4 lin. long, with reflexed apex. Column stout, 2 lin. long; stipes of pollinia simple, very slender.

Lower Guinea. Gaboon: Munda; Sibange Farm, in woods, *Soyaux*, 244! Angola: Golungo Alto, near the Cuango rivulet, and Mountains of Queta, *Welwitsch*, 658!

The flowers are remarkably like a *Galeandra* in shape.

4. **A. alcicorne,** *Reichb. f. Otia Bot. Hamb.* ii. 117. Stems short, 6–7-leaved, with many thickish roots. Leaves cuneate-obovate, 4–5 in. long, 5–15 lin. broad, with long attenuate base; apex unequally bilobed; lobes roundish-oblong. Racemes suberect or arcuate, 6–8 in. long, 6–8-flowered. Bracts ovate-oblong, obtuse, 2–3 lin. long. Pedicels 6 lin. long. Sepals elliptic-lanceolate, acute or apiculate, 7 lin. long. Petals similar, but a little shorter and broader. Lip broadly ovate, 6–7 lin. long; apex rounded, obtuse or apiculate; base narrowed; spur slender below, subclavate near the apex, slightly curved, 14 lin. long. Column stout, 1½ lin. long.

Mozamb. Dist. British Central Africa: Shibisa (Chikwawa), River Shire, *Kirk*, 114!

A flowerless specimen from Palombi Gorge, in the Mlanje Hills, *McClounie*, 1! has leaves less attenuate below, but is otherwise very similar, and may be a form of the same species.

5. **A. Kirkii,** *Rolfe.* Stems short, with many rather stout roots, 5–7-leaved. Leaves 2–6 in. long, 4–9 lin. broad; narrowly cuneate, with the apex dilated unequally, and obtusely bilobed. Scapes suberect or horizontal, 2–5-flowered, 2–7 in. long. Bracts ovate-oblong, acute, 2–4 lin. long. Pedicels 10–12 lin. long. Sepals and petals ovate-lanceolate, acuminate, 9–14 lin. long. Lip similar to the petals, but broader at the base; spur slender, slightly curved. Column stout,

$2\frac{1}{2}$ lin. long. Capsule linear, 2–$2\frac{1}{2}$ in. long.—*A. bilobum*, var. *Kirkii*, Reichb. f. in Gard. Chron. 1882, xviii. 488; Will. Orch. Alb. iv. t. 162; *A. apiculatum*, var. *Kirkii*, Reichb. f. in Gard. Chron. 1885, xxiv. 456, in note.

Nile Land. British East Africa: near Mombasa, at Mkomani Free Town, and Cheroni Rabai, *Taylor!* Kinagani, *Hildebrandt*, 1286!

Mozamb. Dist. German East Africa: Pangani River valley, 30 miles inland, 300 ft., *Kirk!* Kilimanjaro, *Smith!* Usambara, Bombuera, *Holst*, 2211!

Quite distinct from the West African *A. bilobum*, Lindl., to which it is referred as a variety by Reichenbach. A specimen from the Ushambala Hills, *Kirk!* probably belongs to a luxuriant form of this species. The racemes are about 6 in. long, 3–6-flowered, and apparently pendulous. *A. apiculatum*, var. *dormanianum*, Reichb. f. in Gard. Chron. 1885, xxiv. 456, may also belong here. The native country is not recorded.

6. **A. rohlfsianum,** *Kränzl. in Bot. Zeit.* 1882, 341. Stems short, 3–4-leaved, with stout roots. Leaves cuneate-obovate, 4–8 in. long, $\frac{3}{4}$–$1\frac{1}{4}$ in. broad; apex unequally bilobed, with rounded lobes. Scapes erect, about the same length as the leaves, 4–8-flowered, with 2 or 3 subacute sheaths at the base. Bracts ovate, acute, 3–4 lin. long. Pedicels $1\frac{1}{2}$–2 in. long. Sepals and petals oblong-lanceolate, acuminate, 10–12 lin. long. Lip similar to the petals; spur slender, somewhat curved, $4\frac{1}{2}$–6 in. long. Column stout, 3 lin. long; rostellum subulate, curved, with 2 tubercles at its base.—Kränzl. in Reichb. f. Xen. Orch. iii. 76, t. 240.

Nile Land. Abyssinia: Wadi Woina, *Steckert.*

Pollinia unknown, but the species is clearly allied to the preceding. I have not seen specimens.

7. **A. kotschyanum,** *Reichb. f. in Oestr. Bot. Zeitschr.* 1864, 338. Stems very short, with numerous thick roots, 3–6-leaved. Leaves obovate-oblong, subobtusely or acutely bilobed, $2\frac{1}{2}$–5 in. long, $\frac{3}{4}$–$2\frac{1}{2}$ in. broad; base attenuate. Racemes pendulous, 9–15 in. long, many-flowered. Bracts triangular-ovate, acute, 2–4 lin. long. Pedicels $\frac{3}{4}$–$1\frac{1}{2}$ in. long. Sepals elliptic-lanceolate, acute, 6–14 lin. long. Petals slightly smaller than the sepals. Lip subpandurate, apiculate, $\frac{1}{2}$–1 in. long, 4–8 lin. broad; spur more or less curved and often twisted about the middle, slightly thickened towards the apex, 5–8 in. long. Column stout, 3 lin. long, rostellum subulate, somewhat curved. Capsule obovate-oblong, 2 in. long.—Reichb. f. ex Baker in Trans. Linn. Soc. xxix. 153, in note; *A. Kotschyi*, Reichb. f. in Gard. Chron. 1880, xiv. 456, 693, 694, fig. 131; 1884, xxii. 712; Will. Orch. Alb. iv. t. 179; Veitch, Man. Orch. vii. 132, with fig.; Bot. Mag. t. 7442; Orchidoph. 1883, 796, 797, with fig.; Wien. Gart. Zeit. 1891, 309, 310, fig. 63; *A. semipedale*, Rendle in Journ. Linn. Soc. xxx. 389.

Nile Land. Upper Senaar: above Fazokl, near Camamil, *Kotschy*, 449. British East Africa: Rabai Hills, near Mombasa, *Taylor!*

Mozamb. Dist. German East Africa: Kilimanjaro, *Smith!* Pangani Valley, at foot of hills, *Kirk!* British Central Africa: Lower Valley of River Shire, *Meller!* Mt. Mlanje, *Waller!*

I have not seen Senaar specimens, and follow Reichenbach in considering the southern specimens identical. *A. semipedale*, Rendle, I cannot distinguish, but *A. Grantii*, Bateman, doubtfully referred here by Reichenbach, seems distinct.

8. **A. Grantii,** *Batem. ex Baker in Trans. Linn. Soc.* xxix. 153. Roots stout, densely fascicled. Stems very short, about 3-leaved. Leaves obovate-oblong, unequally and obtusely bilobed, attenuate below, 4–5 in. long, 1–1¼ in. broad. Racemes 6 in. long, 4–6-flowered. Bracts very broad and short. Perianth (withered). Spur of the lip very slender and flexuous, 6–7¼ in. long. Capsule obovate-oblong, 1½–1¾ in. long.—*Angræcum sp.* Speke, Journ., App. 648.

Nile Land. British East Africa: Madi, on a lichen-covered bough of *Kigelia pinnata*, *Grant*, 716!

A fruiting specimen only known; Reichenbach thinks it may be his *A. kotschyanum*, but the spur is more slender, very flexuous, not thickened at the apex, and the racemes are only half as long.

9. **A. pachyurum,** *Rolfe.* Stems short. Leaves subspathulate-oblong, unequally and very shortly and obtusely bilobed, 3–3½ in. long, 8–10 lin. broad. Racemes pendulous, 6–9 in. long, many-flowered. Bracts broadly ovate, obtuse, or apiculate, 1½–2 lin. long. Pedicels ½ in. long. Sepals elliptic-oblong, apiculate, 4 lin. long. Petals elliptic, apiculate, 4 lin. long. Lip elliptic, apiculate, a little narrowed below, 4 lin. long; spur curved, 2¼–3 in. long, stouter than in the allied species. Column stout, 2 lin. long.

Mozamb. Dist. British Central Africa: cultivated specimens!

Described from cultivated specimens introduced by Mr. J. Buchanan, which flowered in the collection of Mr. J. O'Brien in 1891. It is easily distinguished from its allies by the thickened spur. A specimen collected near Tetté, River Shire, *Kirk!* may be a weak form of this species.

10. **A. avicularium,** *Reichb.f. in Gard. Chron.* 1887, i. 40. Leaves elliptic-oblong, cuneate below, contracted and obtusely bilobed at the apex, 4 in. long, 2½ in. broad. Peduncle 9–10 in. long, somewhat one-sided, rather lax, 15-flowered. Bracts scarious, triangular, one quarter as long as the pedicels. Pedicels one-fifth as long as the spur. Sepals and petals lanceolate, aristate. Lip oblong, dilated from a narrower base, cuspitate; spur filiform, 4–5 in. long. Column with a very obtuse anther, obscurely apiculate in the middle; rostellum linear, beak-like.

Tropical Africa. Without locality, cultivated specimen!

Flowered in the collection of Sir Trevor Lawrence, Bart., in 1887; said to be allied to the following species, and probably of Tropical African origin. I have only seen a single raceme.

11. **A. bilobum,** *Lindl. in Bot. Reg.* 1840, *Misc.* 69; 1841, *t.* 35. Stems short, 5–8-leaved. Leaves obovate-oblong, 3–5 in. long, 1–1¾ in. broad; apex shortly and unequally bilobed; base cuneate-attenuate below. Racemes pendulous, 6–12 in. long, many-flowered. Bracts broadly ovate-oblong, obtuse, 1½–2 lin. long. Pedicels ¾–1 in. long. Sepals and petals oblong-lanceolate, shortly acuminate and reflexed,

7–8 lin. long; spur slender, slightly curved, $1\frac{1}{2}$–$1\frac{3}{4}$ in. long. Column stout, $2\frac{1}{2}$ lin. long.—Reichb. f. in Walp. Ann. vi. 904; *A. apiculatum*, Hook. Bot. Mag. t. 4159. *Listrostachys biloba*, Kränzl. in Engl. Jahrb. xxii. 28, in note.

Upper Guinea. Sierra Leone, *Whitfield*, cultivated specimens! Gold Coast: Cape Coast Castle, *Bowdich*, cultivated specimens! Togoland, *Baumann*, 592!

Originally flowered in Messrs. Loddiges' nursery in 1840. Abyssinian specimens formerly referred here belong to *A. brachycarpum*, Reichb. f. *A. bilobum*, var. *Kirkii*, Reichb. f., is referred to *A. Kirkii*, Rolfe.

12. **A. Batesii,** *Rolfe.* Stem very short, about 5-leaved. Leaves obovate-oblong, obliquely and obtusely bilobed, attenuate at the base, 3–4 in. long, 1–$1\frac{1}{4}$ in. broad. Scape slender, pendulous, $1\frac{1}{2}$ ft. long, about 8-flowered. Bracts ovate-oblong, subacute, cucullate, $1\frac{1}{2}$ lin. long. Pedicels slender, $1\frac{1}{2}$ in. long. Flowers white. Sepals and petals linear-lanceolate, acuminate, 7–9 lin. long. Lip narrowly oblong-lanceolate, acuminate, reflexed at the sides, 6–7 lin. long; disc convex near the base; spur slender, strongly curved below the middle, $2\frac{1}{4}$–$2\frac{1}{2}$ in. long. Column stout, $2\frac{1}{2}$ lin. long; rostellum subulate, curved, $\frac{3}{4}$ lin. long.

Upper Guinea. Cameroons: Efulen, in damp forest, hanging from twigs near the ground, *Bates*, 412!

A fruiting specimen collected between Bumban and Lokko, Sierra Leone, *Scott-Elliot*, 5740! appears to be closely allied. The leaves are oblanceolate-oblong, 6–$6\frac{1}{2}$ in. long, 10–13 lin. broad. Racemes 9–10 in. long. Capsules cylindric, $2\frac{1}{4}$–$2\frac{1}{2}$ in. long, $2\frac{1}{2}$–3 lin. broad.

13. **A. flexuosum,** *Rolfe.* Stem short, about 1 in. long, with many long roots, 3–5-leaved. Leaves oblong, unequal at the apex, 2–$4\frac{1}{2}$ in. long, 8–12 lin. broad, cuneate-attenuate at the base; apex obscurely bilobed. Racemes slender, ascending, flexuous, 6–10 in. long, many-flowered, with about 2 sheaths at the base. Flowers white. Bracts broadly ovate-obtuse, cucullate, $1\frac{1}{2}$–$2\frac{1}{2}$ lin. long. Pedicels 1 lin. long, spreading. Sepals and petals lanceolate, acute, subequal, 6 lin. long. Lip oblong-lanceolate, acute; spur slender, curved, 8–9 lin. long. Column clavate, $2\frac{1}{4}$ lin. long; pollinia with a single clavate stipes; rostellum bifid, with short lobes.—*Radinocion flexuosum*, Ridl. in Bolet. Soc. Brot. v. 200, fig. A.

Lower Guinea. St. Thomas: without locality, *Quintas*, 16! Saudade, 2400 ft., *Quintas*, 91!

Separated generically by Ridley on account of the slender, somewhat elongated column, which, however, is much exceeded in *A. gracillimum*, Kränzl. It is closely allied to the preceding and following species.

14. **A. henriquesianum,** *Rolfe in Gard. Chron.* 1890, viii. 466 (*not of Ridl.*). Stems short, about 5-leaved. Leaves oblanceolate-oblong, obscurely and obliquely bilobed, $1\frac{1}{2}$–3 in. long, $\frac{3}{4}$–1 in. broad. Racemes pendulous, 5–6 in. long, about 10-flowered. Bracts broadly triangular-ovate, obtuse, 2 lin. long. Pedicels 7–8 lin. long, light buff-brown. Sepals and petals lanceolate, acute, $\frac{1}{2}$ in. long, white, faintly

tipped with light buff. Lip lanceolate-oblong, acute; margin and apex slightly reflexed, a little broader than the petals; spur slightly curved, gradually tapering to the apex, 9–10 lin. long. Column clavate, $2\frac{1}{2}$ lin. long, white; wings very short, broad, and truncate; rostellum curved, slender, capitate; stipes of pollinia very slender.—*A. elegans*, Rolfe in Bolet. Soc. Brot. ix. 140.

Lower Guinea. St. Thomas, *Henriques*, garden specimen!

Originally flowered in the Coimbra Botanic Garden in 1889. It is about half the size of *A. bilobum*, Lindl.

15. **A. arachnopus,** *Reichb. f. in Bonplandia*, 1854, 93. Racemes over 1 ft. long, filiform, few-flowered, subflexuous. Sepals and petals linear-lanceolate, acuminate. Lip about as long as the petals; spur filiform, twice as long as the pedicels. Column slender; stigma central, limb underneath the stigma entire; anther obtuse, conical, limb of androclinium subentire.—Walp. Ann. vi. 905.

Upper Guinea. Gold Coast, *Schiller*, garden specimen.

Flowered in the collection of Consul Schiller in 1854. Only known to me from the original description, in which it is said to be allied to *A. bilobum*, Lindl., but to be twice as slender.

16. **A. gracillimum**, *Kränzl. in Engl. Jahrb.* xvii. 59, *t.* 5, *figs. B–H.* Roots long and slender. Stems very short, about 5-leaved. Leaves obovate-oblong, $3\frac{1}{2}$–5 in. long; base attenuate; apex minutely and unequally bidenticulate. Racemes pendulous, very slender, 1–$1\frac{1}{4}$ ft. long, few-flowered. Bracts small. Pedicels slender, $1\frac{1}{4}$ in. long. Sepals linear–lanceolate, very acuminate, 2 in. long, spreading. Petals slightly narrower than the sepals, in other respects similar. Lip like the petals but subcordate at the base, $1\frac{1}{2}$ in. long; spur very slender, clavate at the apex, 8 in. long. Column very slender, subclavate at the apex, apiculate, 10 lin. long; rostellum produced into a subulate tooth.

Upper Guinea. Cameroon Mountains, in the primæval forest west of Barombiba-Mbu, *Preuss*, 459.

Remarkable for its very long, slender column. The pollinia were missing from the specimen described and figured.

17. **A. rhodostictum,** *Kränzl. in Notizbl. K. Bot. Gart. Berlin*, 1896, 154. Stems short, with numerous roots, 6-leaved. Leaves linear-lanceolate, 2–5 in. long, 2–5 lin. broad, apex very unequally lobed. Racemes arching or pendulous, 1 ft. long, many-flowered. Bracts ovate-oblong, obtuse, $1\frac{1}{2}$–$2\frac{1}{2}$ lin. long. Pedicels 6–8 lin. long. Flowers white. Dorsal sepal elliptic-oblong, apiculate, 5–6 lin. long; lateral oblong, apiculate, 6 lin. long. Petals obovate, elliptic, apiculate, 6 lin. long. Lip broadly rhomboid-elliptic, apiculate, 8–9 lin. long; spur curved, slender below, slightly thickened above, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long. Column stout, $1\frac{1}{2}$ lin. long.

Upper Guinea. Cameroon Mountains, Yaunde, 2600 ft., *Zenker & Staudt*, 434!

Nile Land. Somaliland: between Alghe and Oi, *Ruspoli-Riva*, 1360.

Like the Madagascar *A. citratum*, Thou. I have not seen the Somaliland plant, and the distribution is remarkable.

18. **A. luteo-album,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 158. Stems short. Leaves few, linear-oblong, acute. Pedicels elongate, few-flowered. Bracts minute, triangular. Sepals unguiculate-obovate. Flowers pale yellow. Petals shorter and broader than the sepals, obovate, rotundate. Lip like the petals but larger, rounded in front; spur filiform, three times longer than the lip.—Kränzl. in Engl. Jahrb. xxii. 27.

Nile Land. British East Africa: forest on the upper Ituri, *Stuhlmann*, 2650; west of Lendu, *Stuhlmann*, 2720.

Near the Madagascar *A. citratum*, Thou., but the flowers are described as nearly twice as large, and the leaves linear and smaller. I have not seen it.

19. **A. Rohrii,** *Reichb. f. Otia Bot. Hamb.* ii. 117. Stems very short, with numerous stout roots, 4–6-leaved. Leaves linear-oblong, obliquely and obscurely bidentate, obtuse, $3\frac{1}{2}$–4 in. long, 7–9 lin. broad. Racemes numerous, erect or spreading, somewhat flexuous, 5–6 in. long, many-flowered. Bracts broadly ovate, apiculate, $1\frac{1}{2}$–2 lin. long. Pedicels 2 lin. long. Sepals oblong, obtuse, $2\frac{1}{2}$ lin. long. Petals linear-oblong, obtuse, $2\frac{1}{2}$ lin. long. Lip rhomboid, obtuse-angled, $2\frac{1}{2}$ lin. long; spur slender, with clavate apex, 4–6 lin. long. Column stout, $\frac{3}{4}$ lin. long; pollinia not seen.

Nile Land. Abyssinia, *Roth !* not *Rohr*, as given by *Reichenbach*.

20. **A. Quintasii,** *Rolfe in Bolet. Soc. Brot.* ix. 140. Plant dwarf. Leaves linear-lanceolate, subobtuse, $1\frac{1}{2}$–3 in. long, 3–$3\frac{1}{2}$ lin. broad. Racemes subpendulous, slender, 3–$4\frac{1}{2}$ in. long, 8–12-flowered. Bracts ovate, subobtuse, brown. Pedicels $2\frac{1}{2}$ lin. long. Sepals oblong, obtuse, $1\frac{1}{2}$ lin. long. Petals a little smaller than the sepals. Lip ovate, obtuse, $1\frac{1}{2}$ lin. long; spur subclavate, 3 lin. long; apex incurved. Column very short; wings nearly obsolete; pollinia not seen. Capsule elliptic-oblong, 5 lin. long.

Lower Guinea. St. Thomas, 4000 ft., *Quintas*, 6 !

A very distinct species. The pollinia were absent from the flowers examined.

21. **A. malangeanum,** *Kränzl. in Engl. Jahrb.* xxii. 26. Stems, roots, and leaves not known. Racemes short, dense; rhachis very flexuous. Bracts ovate, acute, longer than the ovary. Flowers distichous, including the spur, 7 lin. long, 5 lin. broad. Dorsal sepal oblong, acute; lateral triangular-acuminate, subfalcate from an ovate base. Petals about as long as the sepals, straight. Lip pandurate; side lobes well developed, rounded; front lobe subquadrate, with rounded angles; apex bilobed or sinuate with an apiculus in the angle; disc with 5 slightly thickened lines; spur narrowly funnel-shaped at the mouth, sharply bent and more or less twisted in the middle, then vesicate at

the apex, a little longer than the ovary. Column stout; gland large, triangular; stipes simple, linear; rostellum bipartite.

Lower Guinea. Angola: Malange, on a tree, *Mechow*, 361.

Only known to me from the original description.

22. **A. dives,** *Rolfe.* Stem short and stout. Leaves linear-oblong, obtuse, a little narrowed below, 4–6½ in. long, 6–9 lin. broad. Racemes numerous, erect, somewhat curved, 5–7 in. long, many-flowered. Bracts broadly ovate from a tubular base, acute, 1¼–1¾ lin. long. Pedicels 1½–2 lin. long. Sepals and petals ovate-lanceolate, acute, 2 lin. long. Lip sessile, broadly cucullate-ovate, acuminate and somewhat reflexed above, 2 lin. long; spur subsaccate-oblong, obtuse, 1 lin. long. Column very stout, ½ lin. long.

Nile Land. British East Africa: Mombasa, *Kirk! Wakefield!*

Mozamb. Dist. German East Africa: Kilimanjaro, cultivated specimen!

A very distinct species. The racemes are often borne two or three together from each leaf-axil.

23. **A. occidentale,** *Rolfe.* Plant very dwarf; stem scarcely ½ in. high. Leaves 4, linear-falcate, ensiform, unequally bilobed at the apex, obtuse, 1¼–3¼ in. long, 2½ lin. broad. Peduncles filiform, pendulous, few to 8-flowered. Bracts very minute. Dorsal sepal ovate-triangular, cucullate; lateral linear, obtuse, much longer than the dorsal. Petals ovate, acute. Lip channelled at the base, deeply 3-lobed to the middle; segments narrow, more or less cartilaginous and contracted at the apex; spur incurved, shorter than the lip, bullate at the apex. Column short; anther flat, produced at the apex; rostellum rostrate.—*Saccolabium occidentale*, Kränzl. in Engl. Jahrb. xvii. 57.

Upper Guinea. Cameroons: West of Buea, in the primæval forests, 4000 ft., *Preuss*, 965.

Only known to me from the original description, but said to have the habit of the Madagascar species *A. parviflorum*, Thou. (*Œceocladus parviflora*, Lindl.), with a pendulous raceme.

24. **A. christyanum,** *Reichb. f. in Gard. Chron.* 1880, xiii. 806. Leaves ligulate, approximate, nearly 3 in. long, ¾ in. broad, broadest at the base, "with a 2-angled unequal apex." Peduncles numerous, ½–¾ in. long, very flexuous, 3–4-flowered. Pedicels articulate at the base. Sepals and petals triangular, acute. Lip trilobed, much developed, "extending into a retrorse conical spur, which has appended at a right angle another inflated fusiform spur, separated from the superior part by a constricted mouth" (*Reichenbach*).

Habitat not stated, but believed to be West Africa.

Only known to me from the original description, but said to resemble *Listrostachys arcuata*, Reichb. f., in general aspect and dimensions, and to differ in having a single stipes and smaller rhachis and flowers.

25. **A. Ellisii,** *Reichb. f. in Flora*, 1872, 278. Stem caulescent, several inches high. Leaves obovate-oblong, bidentate, 4–8 in. long, 1–2¼ in. broad. Racemes pendulous, 1–2 ft. long, many-flowered.

Bracts broadly cucullate-ovate, obtuse, 2–4 lin. long. Pedicels 1–1¼ in. long. Sepals and petals ovate- or elliptic-lanceolate, acute, ¾–1 in. long. Lip elliptic-oblong, acute, recurved at the apex, 8–10 lin. long; spur cylindric, 4–6 in. long, straight to beyond the middle, curved at the apex. Column stout, 2½ lin. long, apiculate.—Gard. Chron. 1875, iii. 277, 278, fig. 54; Warn. Sel. Orch. iii. t. 26.

Var. *occidentale*, Kränzl. in Eng. Jahrb. xvii. 59. More slender than the type, with fewer-flowered racemes and shorter spurs. Flowers white; spur light red.

Upper Guinea. Cameroons: in primæval forest west of Buea, *Preuss*, 891.

The variety is only known to me by the short description. The typical form is confined to Madagascar.

26. **A. Thomsoni,** *Rolfe*. Racemes 6–12 in. long, stout, 7–10-flowered. Bracts very broadly triangular-ovate, obtuse or apiculate, cucullate, or the lower ones tubular at the base, 5–8 lin. long. Pedicels 1½–2 in. long. Sepals and petals lanceolate or oblong-lanceolate, acuminate, 11–14 lin. long. Lip elliptic-lanceolate, acute, 9–11 lin. long; disc convex at the base; spur cylindric curved, slightly thickened towards the apex, 4–5½ in. long. Column stout, 4 lin. long.

Nile Land. British East Africa: Lykipia Plateau, 6000–8000 ft., *Thomson!*

A large and handsome species allied to the Madagascar *A. Ellisii*, Reichb. f., but differing in its larger bracts, and proportionately narrower segments. The vegetative organs are unknown.

27. **A. Giryamæ,** *Rendle in Journ. Linn. Soc.* xxx. 388. Leaves large, thick, clavate, many-nerved, 10–11 in. long, 1¾ in. broad; apex unequally bilobed, with rounded lobes; margin revolute. Scapes stout, longer than the leaves, racemose, 1¼–2 ft. long. Bracts broadly ovate, cucullate, obtuse, ½ in. long. Pedicels 1 in. long. Sepals and petals lanceolate; lateral sepals a little smaller and less acute, 14–16 lin. long, 4–5 lin. broad. Lip very broad, suborbicular, emarginate, with a recurved apiculus, 14 lin. long, 19 lin. broad; disc with a longitudinal keel; spur curved, 2 in. long. Column very stout, 2 lin. long; lobes of the rostellum broad and rounded; stipes of the pollinia short, glands large.—*A. eburneum*, Reichb. f. ex S. Moore in Journ. Bot. 1878, 137 (not of Thou.); Reichb. f. in Trans. Linn. Soc. ser. 2, ii. 349; Durand & Schinz, Conspect. Fl. Afr. v. 41, in part.

Nile Land. British East Africa: near Mombasa; on the Giryama, Shimba, and Rabai Hills, *Taylor!* Between Jomvu and Ribe, near a maritime creek, *Wakefield!*

Mozamb. Dist. Zanzibar; rocky head at the west of the island, *Kirk!* German East Africa: Usambara; Magila, 2000 ft., *Kirk!* Kilimanjaro, 6000 ft., *Johnston!*

This has been confused with the Bourbon *A. eburneum*, Bory, to which, and to *A. superbum*, Thou., from Madagascar, it is allied. A sketch from *Wakefield*, 32! without locality, may represent this or an allied species.

28. **A. eichlerianum,** *Kränzl. in Berl. Gart. Zeit.* i. (1882), 434, 435, fig. 102. Stems elongate, ancipitous, with many long roots. Leaves distant, elliptic, 3½–4¾ in. long, ¾–1¼ in. broad, somewhat

oblique and canaliculate at the base, at the apex with 2 unequal obtuse lobes; sheaths 2 in. long. Racemes 2–3-flowered, opposite the leaves; base with 2–3 sheaths. Bracts small, ovate, acute, $2\frac{1}{2}$ lin. long. Flowers green, with upper half and margin of the lip white. Sepals ovate-lanceolate, acute or subacuminate, about $1\frac{1}{2}$ in. long. Petals similar to the sepals, but a little shorter. Lip nearly quadrate, with an abruptly acuminate recurved apex; disc with a pair of elevated, slightly pilose lines, extending from the base to a little beyond the middle, where they diverge somewhat; spur clavate, curved; base shortly funnel-shaped; limb of lip and spur each about as long as the sepals. Column very short; rostellum furcate.—Kränzl. in Mitth. Deutsch. Schutzg. ii. (1889) 159; and in Reichb. f. Xen. Orch. iii. 128, t. 273, fig. 2.

Upper Guinea. S. Cameroons, *Braun.*

South Central. Lunda: near Kassamba, in the gorge of the Loango River (ex *Kränzlin*).

I have not seen a specimen.

29. **A. schœllerianum,** *Kränzl. in Bull. Herb. Boiss.* ii. *App.* ii. 112. Stem very long, many-leaved, with very long roots. Leaves linear, unequally bilobed; lobes obtuse and somewhat diverging. Racemes few-flowered, very flexuous, half as long as the leaves. Bracts minute, triangular or oblong, acuminate. Lip trilobed; side lobes well developed, diverging, rounded; front lobe oblong, acute; disc with 3 to 5 elevated lines; spur conical at the base, bent at a right angle and slightly inflated in the middle, fusiform and obtuse at the apex. Column very short.

Nile Land. Eritrea; near Filfil, on the Maldi-strasse, 2400 ft., *Schweinfurth,* 169.

Only known to me from the original description, in which it is said to be most nearly allied to the preceding.

30. **A. imbricatum,** *Lindl. in Journ. Linn. Soc.* vi. 137. Stems tall, climbing, leafy. Leaves oblong or ovate-oblong, very shortly and obliquely bilobed, obtuse, a little broader below, 3–$4\frac{1}{2}$ in. long, $1\frac{1}{4}$–$1\frac{3}{4}$ in. broad. Racemes axillary subsessile, 1–$1\frac{1}{2}$ in. long, dense, many-flowered, with distichous bracts and flowers. Bracts ovate, acute, concave, closely imbricate, 3–6 lin. long. Pedicels 5–6 lin. long. Sepals ovate, acute, concave; dorsal carinate, 3 lin. long. Petals similar and equal to the sepals. Lip oblong, apiculate, cucullate, as long as the sepals; spur infundibuliform at the base, recurved and subclavate at the apex, 4 lin. long. Column very short; pollinia with single stipes and narrow gland; rostellum rostrate.—Durand & Schinz, Conspect. Fl. Afr. v. 44 (*intricatum*). *Limodorum emarginatum,* Sw. in Vet. Acad. Handl. Stockh. 1800, 243 (name only); Pers. Syn. Pl. ii. 521. *Calyptrochilum Preussii,* Kränzl. in Engl. Jahrb. xxii. 30. *Saccolabium Barbeyæ,* Kränzl. in Bull. Herb. Boiss. iv. 40.

Upper Guinea. Sierra Leone, *Afzelius!* Bumban to Port Lokko, *Scott-Elliot,* 5734! Liberia, *Christy!* Gold Coast, cultivated specimen! Lower Niger, Onitsa,

Barter, 1484! Cameroons: between Victoria and Bimbia, *Preuss*, 1240 (ex Kränzlin). Bipinde, in ancient forest, *Zenker*, 847!

I have seen authentic specimens of all the synonyms quoted above, and find nothing to separate them.

31. **A. Moloneyi,** *Rolfe*. Stem caulescent, stout. Leaves numerous, oblong or ovate-oblong, shortly and unequally bilobed, with rounded lobes, very coriaceous, 1½–4 in. long, 5–12 lin. broad. Racemes axillary, ¾–1 in. long, with a few broad sheaths at the base, 6–10-flowered. Bracts rigid, spreading, triangular-ovate, subacute, 1–1½ lin. long. Pedicels 4–5 lin. long. Sepals and petals ovate-lanceolate, acute or apiculate, 3½–4 lin. long. Lip trilobed; limb 4 lin. long; side lobes rounded or auriculate; front lobe broadly ovate-oblong, emarginate; spur 4 lin. long, broadly conical at the base, constricted above the middle, and much inflated at the apex. Column very stout, 1½ lin. long.

Upper Guinea. Sierra Leone: cultivated specimens, *Lord Scarborough!* Liberia: cultivated specimens, *Christy!* Lagos, *Moloney! Rowland!*

32. **A. mombasense,** *Rolfe*. Stem caulescent, stout. Leaves oblong, unequally bilobed, with truncate lobes, very coriaceous, 1¾ in. long, 6–7 lin. broad. Racemes axillary, ¾ in. long, with one or two short broad sheaths at the base, 4–5-flowered. Bracts rigid, spreading, triangular-ovate, subacute, 1½–2 lin. long. Pedicels 4 lin. long. Sepals ovate-lanceolate, acuminate or apiculate, 3½–4½ lin. long. Petals elliptical, apiculate, slightly shorter than the sepals. Lip trilobed; limb 5 lin. long; side lobes broadly rounded or auriculate; front lobe broadly oblong, deeply emarginate; spur 3 lin. long, broadly conical at the base, constricted above the middle, and inflated at the apex. Column very stout, 1½ in. long.

Nile Land. British East Africa: Mombasa, *Kirk*, 12!

Nearly allied to the preceding, but differing in several particulars. The specimen is very small, consisting only of a piece of stem with one leaf and two racemes.

33. **A. lagosense,** *Rolfe*. Caulescent. Stems somewhat elongated. Leaves oblong or linear-oblong, unequally and shortly bilobed at the apex, 1¾–2 in. long, 3–5 lin. broad. Racemes axillary, 2–3 lin. long, few-flowered. Bracts broadly ovate, subacute or apiculate, ½ lin. long. Pedicels 1½–2 lin. long. Dorsal sepal broadly elliptic-oblong, subobtuse, concave, 2 lin. long; lateral ovate, obtuse, broader than the dorsal. Petals lanceolate-oblong, subobtuse, nearly as long as the sepals. Lip 2½ lin. long, broadly oblong below, with a pair of small, triangular-oblong, diverging teeth about the middle, subulate-oblong and subobtuse in front; spur clavate-oblong, nearly as long as the lip. Column stout, 1 lin. long; pollinia with a single clavate stipes.

Upper Guinea. Lagos, *Moloney!*

34. **A. clavatum,** *Rolfe*. Stem long and climbing. Leaves ovate-oblong, obliquely and obtusely bidentate, ¾–1 in. long, 4–6 lin. broad. Racemes axillary, ½–¾ in. long, many-flowered. Bracts spreading,

ovate, minute. Pedicels slender, $2\frac{1}{2}$ lin. long. Sepals and petals ovate-oblong, subobtuse, concave, carinate, $\frac{3}{4}$ lin. long. Lip almost reduced to a stout, clavate spur, $2\frac{1}{2}$ lin. long; side lobes very small and rounded; front lobe triangular, obtuse, minute. Column very stout, $\frac{1}{2}$ lin. long. Capsule elliptic-globose, pedicelled, 4 lin. long.

Upper Guinea. Sierra Leone: Kambia, *Scott-Elliot*, 4223! Lagos, *Moloney!*

Remarkable for the inordinate proportion which the clavate spur bears to the rest of the flower. The Sierra Leone specimen is in fruit only, but I think it belongs to the same species.

35. **A. Wakefieldii,** *Rolfe.* Stem long and climbing. Leaves ovate-oblong, obliquely bidentate, $\frac{3}{4}$–$1\frac{1}{4}$ in. long, 5–7 lin. broad. Racemes axillary, 1 in. long, many-flowered. Bracts spreading, ovate, minute. Capsules oblong, slenderly pedicelled, 3–$3\frac{1}{2}$ lin. long.

Nile Land. British East Africa: Nyika country, *Wakefield!* Mombasa, *Wakefield!*

Near the preceding in habit, but the capsules are very different. Flowers are at present unknown.

36. **A. lepidotum,** *Reichb. f. in Gard. Chron.* 1880, xiii. 806 (*in note*). Caulescent, sometimes branched, stout, leafy. Leaves oblong, shortly and unequally bilobed, 1–2 in. long, 5–9 lin. broad; lobes obtuse; sheathing bases nearly as long as the internodes. Racemes axillary, very short, flowers subfascicled. Bracts ovate, acute, $1\frac{1}{2}$ lin. long. Pedicels 2 lin. long, furfuraceous. Sepals ovate-oblong, obtuse, 2 lin. long. Petals linear-oblong, obtuse, 2 lin. long. Lip ovate, subobtuse or apiculate, 2 lin. long; spur slightly thickened at the base, clavate in the upper half, $4\frac{1}{2}$ lin. long. Column $\frac{3}{4}$ lin. long; pollinia with a single, clavate stipes; rostellum short, triangular.

Upper Guinea. Liberia: cultivated specimens! Lagos, *Moloney!* Niger Delta: Bonny, *Monteiro!*

Originally flowered in the collection of Mr. T. Christy.

37. **A. schimperianum,** *Reichb. f. in Walp. Ann.* iii. 573. Stems climbing, with strong roots, 6–9-leaved. Leaves linear-oblong, 3–5 in. long, 8–12 lin. broad. Racemes axillary, 2–3 in. long, 4–8-flowered. Bracts ochreate, acute, $1\frac{1}{2}$ lin. long. Flowers as large as those of *Listrostachys pellucida*, Reichb. f. Sepals and petals oblong, acute. Lip rhomboid, obtuse; front margin denticulate; disc with a flat tooth at the base; spur slender; apex clavate, acute, longer than the lip. Column short, stout; rostellum trilobed. Capsule elliptic-oblong, $\frac{3}{4}$ in. long.—Engl. Hochgeb. Fl. Trop. Afr. 187. *Dendrobium schimperianum*, A. Rich. Tent. Fl. Abyss. ii. 282.

Nile Land. Abyssinia: in dense woods on Mount Aber, near Gerar, *Schimper*, 1318!

A specimen collected at Ankober, Shoa, by *Roth!* has broader leaves, and may possibly be different.

38. **A. Scottellii,** *Rendle in Journ. Bot.* 1895, 249. Stems elongate, sometimes branched, 6–12 in. or more long. Leaves

linear, 5½ in. long, 2–2½ lin. broad; apex very unequal. Peduncles axillary, 1 lin. long, 1-flowered. Flowers small. Bracts triangular-ovate, 1½ in. long. Pedicels 2½ lin. long. Sepals ovate, acute, larger than the petals, 3 lin. long; apex thick, reflexed. Petals lanceolate, 2 lin. long. Lip trifid; front lobe narrowly triangular, acute; side lobes longer, filiform and curved above the base, 3 lin. long; spur slender, 5–6 lin. long. Column short and thick, 1 lin. long; pollinia affixed to a flat stipes and squamiform gland.

Nile Land. British East Africa: Ruwenzori; head of Butagu valley, 7000 ft., *Scott-Elliot*, 8081! Butagu, 8000 ft., *Scott-Elliot*, 8100!

Allied to *A. bicaudatum*, Lindl., and *A. fimbriatum*, Rendle. Flowerless specimens collected at the Nun River, Niger Delta, by *Barter!* are very similar in habit but probably belong to a different species.

39. **A. armeniacum,** *Lindl. in Bot. Reg.* 1839, *Misc.* 67. Plant caulescent, 6 in. high. Roots stout. Leaves distichous, channelled, obliquely and acutely bidentate, 3–4 in. long, 4 lin. broad. Spikes lateral, horizontal, secund, 3 in. long. Bracts broad, truncate, ⅓ lin. long. Flowers of a uniform apricot-colour. Sepals ovate, acute, 1½ lin. long. Petals lanceolate, acute, 1½ lin. long. Lip trilobed, 1½ lin. long; side lobes acuminate; front lobe triangular, acute; spur pendulous, clavate, compressed at the base, 3½–4 lin. long.—Reichb. f. in Walp. Ann. vi. 905; Durand & Schinz, Conspect. Fl. Afr. 39 (excl. Angolan plant).

Upper Guinea. Sierra Leone: cultivated specimens, *Loddiges!*

Flowered in Messrs. Loddiges' Nursery in 1839. The Angolan plant cited here by Reichenbach belongs to the next species.

40. **A. tridactylites,** *Rolfe in Gard. Chron.* 1888, iv. 34. Plant with erect or climbing stem, ½–2 ft. high and long, very stout roots produced at intervals on the stem. Leaves elongate-linear, unequally bidentate, 4–8 in. long, 4–7 lin. broad. Racemes axillary, many-flowered, somewhat curved, 2¼–3 in. long. Bracts shortly triangular, broadly amplexicaul. Flowers subsecund, 4 lin. diam. Pedicels 2 lin. long. Lateral sepals ovate, acuminate; dorsal slightly narrower than the lateral, 2 lin. long. Petals lanceolate-linear, acute, 2 lin. long. Lip trifurcate, 2 lin. long; side lobes very slender and recurved; front lobe triangular, acute, straight; spur slender, 5 lin. long, slightly narrowed at the base; lip with a pair of small, fleshy, marginal teeth at the base. Column stout, ¾ lin. long, with a pair of small, rounded wings at the apex.—*A. armeniacum*, Reichb. f. in Flora, 1865, 189 (not of Lindl.).

Upper Guinea. Sierra Leone: cultivated specimens, *Griffith!* Interior of W. Lagos, *Rowland!*

Lower Guinea. Angola: Pungo Andongo, shady rocks in the woods of Barranos de Tongue, *Welwitsch*, 685! Princes Island, *Barter*, 2016!

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan*, 154!

Near *A. bicaudatum*, Lindl., but differing, amongst other characters, in the shape of the side lobes. Barter's specimen has no flowers, but is apparently identical. The species is of unusually wide distribution.

41. **A. Whitfieldii,** *Rendle in Journ. Bot.* 1895, 250. Stems 6 in. or more long, with stout roots. Leaves (not seen); sheaths plicate, 5 lin. long. Racemes axillary, $1\frac{1}{2}$–$1\frac{3}{4}$ in. long, slender, dense-flowered. Bracts shortly ovate, amplexicaul, $\frac{1}{4}$ lin. long. Flowers rather crowded. Pedicels $1\frac{1}{4}$–$1\frac{1}{2}$ lin. long. Sepals 1 lin. long; lateral asymmetric, produced anteriorly at the base. Petals 1 lin. long. Lip trilobed, from a quadrate base, without basal auricles, 1 lin. long; side lobes linear-filiform, 1 lin. long; front lobe triangular; spur 4 lin. long. Column $\frac{1}{2}$ lin. long, with 2 anterior wings.

Upper Guinea. Sierra Leone, *Whitfield!*

Near *A. armeniacum*, Lindl., but differs in its smaller flowers, lip without basal auricles, and the anteriorly produced base of the lateral sepals.

42. **A. fimbriatum,** *Rendle in Journ. Linn. Soc.* xxx. 387, *t.* 32, *figs.* 11–13. Stems elongate, stout, over 1 foot long; roots stout. Leaves linear, recurved, 4–6 in. long, $3\frac{1}{2}$–4 lin. broad, persistent; apex shortly and unequally bilobed; sheaths 7–8 lin. long. Spikes lateral, numerous, many-flowered, $3\frac{1}{2}$–5 in. long. Bracts truncate, amplexicaul, $\frac{2}{3}$ lin. long. Pedicels 2 lin. long. Dorsal sepal oval-lanceolate, cuspidate, 5-nerved, $2\frac{1}{2}$–3 lin. long; lateral ovate-cordate, trinerved, broader than the dorsal, united at the base; apex thick, cuspidate. Petals linear, narrowed upwards, acute, 3-nerved, $2\frac{1}{2}$–3 lin. long. Lip trilobed, $2\frac{1}{2}$ lin. long, with a pair of small basal auricles; side lobes linear, spreading, irregularly fimbriate at the apex, 2 lin. long; front lobe triangular, cuspidate, thick, 3-nerved, 1 lin. long; spur slender, 7 lin. long, base conical. Column short, broadly auricled above, $\frac{1}{2}$ lin. long; beak of rostellum projecting downwards. Capsules oblong, shortly pedicelled, 7–8 lin. long.

Nile Land. British East Africa: Giryama and Shimba Hills, near Mombasa, *Taylor.*

Mozamb. Dist. German East Africa: Usagara mountains, at Mamboio, 2000 ft. *Kirk!*

Near the South African *A. bicaudatum*, Lindl., but differing in its proportionately larger lip.

43. **A. guyonianum,** *Reichb. f. in Linnæa*, xxii. 865. Stems very short, leafless, with dense masses of roots, 6–12 in. long. Racemes numerous, slender, 2–4 in. long. Bracts amplexicaul, obtuse or subacute, $\frac{1}{2}$ lin. long. Pedicels $1\frac{1}{2}$ lin. long. Sepals oblong, subacute, $1\frac{1}{2}$ lin. long. Petals slightly smaller than the sepals. Lip oblong, obtuse or apiculate, $1\frac{1}{2}$ lin. long; spur curved, 1–$1\frac{1}{2}$ lin. long, narrowly conical at the base; slender above. Column stout, minute; pollinia with a single slender stipes. Capsule elliptic-oblong, 3–4 lin. long.—Reichb. f. in Walp. Ann. iii. 572; Martelli, Florul. Bogos, 81; Rolfe in Kew Bulletin, 1895, 37 (in note). *Aëranthus guyonianus*, Reichb. f. in Flora, 1865, 190; Reichb. f. in Otia Bot. Hamb. ii. 78. *Angrœcum globulosum*, Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 285. *Gussonia globulosa*, Ridl. in Journ. Linn. Soc. xxi. 491 (in note). *Mystacidium globulosum*, Durand & Schinz, Conspect. Fl. Afr. 53. *Saccolabium*

radicosum, A. Rich. Tent. Fl. Abyss. ii. 285; *Mystacidium radicosum*, Durand & Schinz, Conspect. Fl. Afr. 54; *Microcœlia? tæniophyllum*, Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 285.

Lower Guinea. Angola: Golungo Alto, frequent near the Cuango rivulet and at Mungo, near the river Casabella, in Sobato de Bumba, *Welwitsch*, 653! Pungo Andongo, on orange-trees in gardens, *Soyaux*, 228!

Nile Land. Abyssinia: below Jeladjeranne, near the river Takazze, *Schimper*, 1565! Amba Sea, 5000–6000 ft., *Schimper*, 560! Eritrea: along the road from Keren to Massaua, near Maldi, *Beccari* (ex *Martelli*). British East Africa: between Duruma and Teita, *Hildebrandt*, 2374 (ex *Reichenbach*).

The above synonyms all clearly belong to the same species. Schimper describes a fascicle of minute leaves at the apex of the stem, but they are not present on his dried specimens.

44. **A. Smithii,** *Rolfe in Kew Bulletin*, 1895, 37. Roots fascicled, slender, subterete, somewhat flexuous, pale green, 4–6 in. long. Stems very short, leafless. Racemes slender, short, 8–12-flowered, 1 in. long. Bracts lanceolate-oblong, acute, $\frac{1}{2}$ lin. long. Sepals and petals linear-lanceolate, acute, suberect, 1 lin. long. Lip linear-lanceolate, acute, suberect, 1 lin. long; spur recurved-spreading, conical scarcely 1 lin. long; stipes of pollinia single.

Mozamb. Dist. German East Africa: Mt. Kilimanjaro, cultivated specimens, *Smith!*

Much smaller than *A. guyonianum*, Reichb. f. Flowered at Kew in 1894. It was received from Consul C. S. Smith, growing on a branch with *A. Kirkii*, Rolfe.

45. **A. Chiloschistæ,** *Reichb. f. in Linnæa*, xx. 678. Stems leafless, very short, with numerous, slender, curved, branched roots, about 9 in. long. Racemes numerous, slender, 4–8 in. long, many-flowered. Bracts triangular-lanceolate, acute, $\frac{1}{4}$ lin. long. Pedicels very short. Sepals and petals obovate-oblong, obtuse, $\frac{1}{2}$–$\frac{3}{4}$ lin. long. Lip $\frac{1}{2}$–$\frac{3}{4}$ lin. long; limb broadly rounded or transversely oblong, very obtuse; spur broadly saccate, $\frac{1}{2}$–$\frac{3}{4}$ lin. long. Column very short and stout. Capsule obovate-oblong, 2 lin. long.—Reichb. f. in Walp. Ann. i. 791; Bolus, Ic. Orch. Austr. Afr. i. t. 6; Durand & Schinz, Conspect. Fl. Afr. v. 40. *Microcœlia exilis*, Lindl. Gen. & Sp. Orch. 61. *Gussonia exilis*, Ridl. in Journ. Linn. Soc. xxi. 493; Journ. of Bot. 1886, 292. *Mystacidium exile*, Durand & Schinz, Conspect. Fl. Afr. v. 52. *Angræcum aphyllum*, Kränzl. in Engl. Pfl. Ost-Afr. C. 157 (not Thou.).

Nile Land. British East Africa: on the Giryama, Shimba and Rabai Hills, near Mombasa, *Taylor!* Nyika, at Jomvu, *Taylor!*

Mozamb. Dist. German East Africa: Usambara; Mascheua, *Holst*, 3549! Bombuera, *Holst*, 2210! Kwa, Mascheua, *Holst*, 8889A. Masai Highlands (ex *Kränzlin*). British Central Africa: Zambesi, about 16° S. lat., 35° E. long., *Meller!* Shire Valley, *Kirk!* Shibisa (Chikwawa), Shire River, *Kirk!* Near Blantyre, Shire Highlands, *Last!*

Also found in Natal and Madagascar. According to Taylor, the plant is called *Ndiko* by the natives, who extract a grey paint from its roots by boiling, which they use for ornamenting their arrows. It is easily distinguished from *A. aphyllum*, Thou., to which Kränzlin refers it, by the very short stem and much smaller flowers.

46. **A. cæspitosum,** *Rolfe.* Stems very short, leafless, with tufts of long flexuous roots. Racemes very short, tufted, $\frac{3}{4}$ in. long, several-flowered. Bracts small, triangular-ovate, acute, $\frac{1}{3}$ lin. long. Pedicels 4–5 lin. long. Sepals ovate, subobtuse, membranous, with a green keeled middle nerve, $1\frac{3}{4}$–2 lin. long. Petals similar but not keeled. Lip with a spreading, ovate, subacute limb, 1–$1\frac{1}{4}$ lin. long; spur linear, somewhat broader below, $4\frac{1}{2}$ lin. long. Column stout $1\frac{1}{2}$ lin. long. Capsule fusiform-oblong, slenderly pedicelled, 7–8 lin. long.

Upper Guinea. Cameroons: Efulen, on twigs of a fallen tree in the forest, *Bates*, 353!

Allied to the Madagascar *A. Gilpinæ*, Reichb. f. and S. Moore.

47. **A. megalorrhizum,** *Reichb. f. Otia Bot. Hamb.* ii. 117. Plant leafless. Stem very short. Roots very long, branched and verrucose, sometimes over 1 ft. long. Racemes fascicled, slender, 3–5 in. long. Bracts triangular, acute, $\frac{3}{4}$ lin. long. Pedicels $1\frac{1}{2}$ lin. long. Sepals and petals oblong-lanceolate, subacute, $2\frac{1}{2}$ lin. long. Lip $2\frac{1}{2}$ lin. long, ovate, subobtuse or apiculate, slightly crenulate, narrowed at the base; spur narrowly conical, slightly curved, $1\frac{1}{2}$–2 lin. long; apex slender. Column nearly 1 lin. long, with deflexed, subulate rostellum. Capsule elliptic-oblong, $\frac{3}{4}$ in. long.

Mozamb. Dist. British Central Africa: Shire Valley, *Waller!* Shibisa (Chikwawa), Shire River, *Kirk!* Nyasaland, *Buchanan*, 1262!

48. **A. aphyllum,** *Thou. Orch. Iles Afr. t.* 73. Stem tall and climbing, leafless, with numerous long flexuous roots. Racemes numerous, $\frac{3}{4}$–1 in. long, many-flowered. Bracts triangular-ovate from a broader base, subacute, $\frac{1}{4}$–$\frac{1}{3}$ lin. long. Pedicels slender, $2\frac{1}{2}$–3 lin. long. Flowers white, becoming reddish in drying. Sepals and petals elliptical-oblong, subobtuse, $1\frac{1}{4}$ lin. long. Lip with a spreading triangular-oblong, subobtuse, concave limb, $\frac{3}{4}$ lin. long; spur $2\frac{1}{2}$ lin. long, strongly curved, narrowed to the middle, broader at the apex. Column stout, 1 lin. long. Capsule elliptic-oblong, slenderly pedicelled, $2\frac{1}{2}$ lin. long.—S. Moore in Baker, Fl. Maurit. 358. *Gussonia aphylla*, A. Rich. Orch. Maurit. 76, t. 11, fig. 1; Ridl. in Journ. Linn. Soc. xxi. 492. *Saccolabium aphyllum*, Lindl. Gen. & Sp. Orch. 223. *Mystacidium aphyllum*, Durand & Schinz, Conspect. Fl. Afr. v. 51.

Nile Land. British East Africa: Mombasa, *Kirk!* Giryama and Shimba Hills, *Taylor!*

Also found in Mauritius and Madagascar.

18. **LISTROSTACHYS**, Reichb. f. in Bot. Zeit. 1852, 930.

Sepals and petals subequal, free, spreading or subconnivent. Lip affixed to the base of the column and continuous with it, produced at the base into a long or sometimes very long spur; side lobes small, or obsolete, at the sides of the spur; limb spreading or erect, entire or obscurely trilobed. Column very short, broad, concave in front, without

wings, footless; clinandrium truncate, entire. Anther terminal, operculate, incumbent, convex, often produced in front, scarcely 2-celled; pollinia 2, globose, sulcate, situated upon a pair of usually slender stipites, distinct or only united at the base, where they are attached to a single variously-shaped gland. Capsule oblong or fusiform.—Epiphytic herbs. Stems leafy, usually short, not thickened into pseudobulbs. Leaves distichous, coriaceous or fleshy, articulated to a persistent sheath. Peduncles lateral, simple. Flowers racemose or capitate, very various in size. Bracts small or medium-sized.

A genus of 60 or more species, most numerous in Tropical Africa, with one South African representative and several in the Mascarene Islands. In its pollinary apparatus it is intermediate between *Angræcum* and *Mystacidium*, though distinct from both.

Flowers large or medium-sized (unknown in 7).
- Spur long and slender, or tapering to the apex, rarely reduced to 5 lin. long.
  - Spur 9–10 in. long . . . . . 1. *L. caudata.*
  - Spur 4–5½ in. long . . . . . 2. *L. chailluana.*
  - Spur 1–3 in. long.
    - *Spur tapering to the apex from a stout base.
      - Leaves oblong or linear-oblong.
        - Racemes equalling or scarcely exceeding the leaves.
          - Spur slightly curved.
            - Rostellum beaked.
              - Western species.
                - Leaves 1¼–1½ in. broad; bracts 9–11 lin. long . . . 3. *L. acuminata.*
                - Leaves ½–¾ in. broad; bracts 3–4 lin. long . . . 4. *L. Hookeri.*
              - Eastern species.
                - Leaves ¾ in. or more broad.
                  - Bracts 4–5 lin. long . . 5. *L. Sedeni.*
                  - Bracts 8–9 lin. long . . 6. *L. Whytei.*
                - Leaves ½ in. broad . . . 7. *L. Erythrææ.*
            - Rostellum short and not beaked . . 8. *L. ringens.*
          - Spur much curved or hooked near the apex.
            - Spur bent in the middle, forming a loop.
              - Leaves ¾–1½ in. broad . . . 9. *L. bistorta.*
              - Leaves 5–6 lin. broad . . . 10. *L. Aschersoni.*
            - Spur suddenly hooked near the apex . 11. *L. trachypus.*
        - Racemes distinctly longer than the leaves.
          - Spur curved, 1¼–1¾ in. long . . . 12. *L. Monteiræ.*
          - Spur straight, about 11 lin. long . . 13. *L. buchholziana.*
      - Leaves narrowly linear . . . . . 14. *L. henriquesiana.*
    - **Spur slender from the base.
      - Leaves narrowed at the apex . . . 15. *L. engleriana.*
      - Leaves with broad obtuse apex . . . 16. *L. muscicola.*
  - Spur 5 lin. long.
    - Spur hooked about the middle . . . 17. *L. rhipsalisocia.*
    - Spur nearly straight . . . . 18. *L. Wittmackii.*

Flowers small or rarely medium-sized (unknown in 48). Spur usually more or less clavate or vesicate at the apex, seldom $\frac{1}{2}$ in. long.

*Stems more or less elongated and climbing (unknown in 21).

Lip pandurate or subpandurate.

Spur clavate, slightly longer than the sepals . 19. *L. ashantensis.*

Spur slender, nearly twice as long as the sepals 20. *L. Popagayi.*

Lip ovate-oblong or obovate.

Lip truncate-emarginate . . . . 21. *L. Bakeri.*

Lip acute or cuspidate.

Spur slender . . . . . 22. *L. acuta.*

Spur subclavate . . . . . 23. *L. subclavata.*

Lip very broad, shortly trilobed in front . . 24. *L. bidens.*

Lip orbicular or suborbicular . . . . 25. *L. monodon.*

**Stems usually short and stout, or not climbing.

†Leaves flat.

Flowers in elongated racemes.

Leaves $\frac{1}{3}$ to more than 2 in. broad.

Flowers and bracts alternate.

Racemes dense.

Spur strongly clavate.

Lip entire, flat or nearly so . . 26. *L. pertusa.*

Lip trilobed with erect side lobes . 27. *L. clandestina.*

Spur scarcely thickened upwards.

Leaves 10 lin. broad . , . 28. *L. gabonensis.*

Leaves 4 lin. broad . . . 29. *L. multiflora.*

Racemes lax.

Spur not, or scarcely, exceeding the lip.

Disc of lip with a small basal tooth 30. *L. pellucida.*

Disc of lip without a basal tooth . 31. *L. divitiflora.*

Spur twice as long as the lip.

Spur 4–5 lin. long.

Leaves $1\frac{3}{4}$–2 in. broad . . 32. *L. vagans.*

Leaves 5–7 lin. broad . . 33. *L. thomensis.*

Spur 8 lin. long . . . 34. *L. ichneumonea.*

Flowers and bracts opposite.

Spur more than twice as long as the segments . . . . . 35. *L. vesicata.*

Spur about as long as the segments.

Sepals and petals 5–6 lin. long, acuminate.

Spur abruptly dilated on one side, $1\frac{1}{2}$ lin. broad . . . 36. *L. fragrantissima.*

Spur clavate, 1 lin. broad . . 37. *L. Welwitschii.*

Sepals and petals 3 lin. long, acute . 38. *L. Kirkii.*

Flowers and bracts verticillate . . 39. *L. urostachya.*

Leaves very narrow, 1–$1\frac{1}{2}$ lin. broad.

Sepals ovate or triangular . . . 40. *L. Virgula.*

Sepals very narrow and acuminate . . 41. *L. graminifolia.*

Flowers in dense, capitate heads.

Leaves 7–8 in. long.

Lip cuneate at the base . . . 42. *L. capitata.*

Lip hastate . . . . . 43. *L. cephalotes.*

Leaves $2\frac{1}{4}$–4 in. long.
Sepals and petals 3 lin. long . . . 44. *L. glomerata.*
Sepals and petals $1\frac{1}{2}$–2 lin. long . . 45. *L. Braunii.*
††Leaves equitant or ensiformly compressed.
Flowers in slender racemes.
Scapes 5 in. long . . . . . 46. *L. Batesii.*
Scapes 2–3 in. long.
Racemes longer than the leaves.
Leaves $1\frac{1}{2}$–2 in. long, subacute . . 47. *L. Zenkeri.*
Leaves 1 in. long, obtuse . . . 48. *L. iridifolia.*
Racemes much shorter than the leaves . 49. *L. forcipata.*
Flowers in short, lax, subcapitate racemes . 50. *L. dactyloceras.*
†††Leaves terete or subterete (unknown in 52).
Lip broadly ovate, subobtuse or apiculate . 51. *L. subulata.*
Lip dilated in front into two large rounded lobes . . . . . 52. *L. filiformis.*

1. **L. caudata,** *Reichb. f. in Walp. Ann.* vi. 907. Stems short, about 8-leaved. Leaves linear-oblong, very shortly bilobed, 6–10 in. long, 1–$1\frac{1}{4}$ in. broad; lobes obtuse, recurved. Scapes pendulous, 9–12 in. long; racemes flexuose, 6–10-flowered. Bracts broadly rounded, obtuse, $1\frac{1}{2}$ lin. long. Pedicels $\frac{1}{2}$ in. long. Sepals triangular-lanceolate, acuminate, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long. Petals similar to the sepals, but about three-fourths the size. Lip trilobed, obovate from a cuneate base, $1\frac{1}{2}$ in. long, $\frac{3}{4}$–1 in. broad; side lobes irregularly toothed above; front lobe triangular-subulate, acute; spur elongate, narrow, flexuous, 9–10 in. long. Column clavate, 6–7 lin. long; rostellum with long subulate beak, 4 lin. long; stipites of pollinia 4 lin. long, united at the extreme base; gland small and rounded.—*Angræcum caudatum*, Lindl. Bot. Reg. t. 1844; Bot. Mag. t. 4370; Reichenbachia, ser. i, ii. 41, t. 67; Garden, xxxix. t. 804; Will. Orch. Alb. viii. t. 358; Orchidophile, 1887, 80, with plate.

Upper Guinea. Sierra Leone, *Loddiges! Whitfield! Afzelius!* Niger Delta: Brass, *Barter*, 1858!

2. **L. chailluana,** *Reichb. f. in Flora*, 1885, 381, in note. Stems erect, 6 in. or more high, many-leaved. Leaves about 1 in. apart, oblong, unequally and shortly bilobed, very coriaceous, $4\frac{1}{2}$–9 in. long, 1–$1\frac{1}{4}$ in. broad; lobes obtuse. Scapes axillary, 6–9 in. long, many-flowered. Bracts broadly ovate, subacute, concave, 6–8 lin. long. Pedicels $1\frac{1}{2}$–2 in. long. Sepals triangular-lanceolate, acuminate, recurved, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long. Petals a little shorter and narrower than the sepals. Lip much like the petals, but slightly broader and obscurely angled at the base; spur narrowly conical at the base, elongate, and narrowed upwards, 4–$5\frac{1}{2}$ in. long. Column stout, 4 lin. long; pollen with 2 slender stipites and 1 elongated gland; rostellum long, deflexed. —*Angræcum chailluanum*, Hook. f. in Bot. Mag. t. 5589; Veitch, Man. Orch. vii. 124. *A. arcuatum*, Lindl. in Journ. Linn. Soc. vi. 136 (not in Hook. Comp. Bot. Mag.).

Upper Guinea. Lagos, *Millen*, 193! Niger Delta: Nun River, *Mann*, 521! Cameroons: Buea, *Preuss*, 372!

Lower Guinea. Gaboon: Como River, *Bates*, 462! and without locality, *Du Chaillu!* Munda Dist.: Sibange Farm, *Soyaux*, 246! Loango, *Micholitz!*

Much larger than the S. African *L. arcuata*, Reichb. f., with which Lindley formerly confused it. A fruiting specimen from Sierra Leone, *Scott-Elliot!* may belong here.

3. **L. acuminata,** *Rolfe*. Leaves oblong, shortly, obtusely and unequally bilobed, 5 in. long, 1½ in. broad. Raceme several-flowered. Bracts broadly ovate, subacute, cucullate, 9–11 lin. long. Pedicels 14 lin. long. Sepals and petals lanceolate, acuminate, somewhat undulate, 11–13 lin. long. Lip lanceolate, acuminate, rather more fleshy than the sepals and petals, 10–12 lin. long; margins somewhat incurved near the base; disc slightly gibbous in front of the spur; spur a little curved, stout below, much narrowed above, 1¾–2 in. long. Column very stout, 1–1½ lin. long.

Lower Guinea. Princes Island, *Henriques!*

4. **L. Hookeri,** *Rolfe*. Stems short, 4–5 in. long. Leaves linear-oblong, 3–5 in. long, 6–10 lin. broad; apex very shortly bilobed; lobes slightly unequal, rounded. Racemes 2½–4 in. long, 4–10-flowered, secund. Bracts broadly ovate, subobtuse, 3–5 lin. long. Pedicels 6–9 lin. long. Sepals lanceolate, acuminate, 6–7 lin. long, recurved. Petals similar to but slightly smaller than the sepals. Lip acuminate from a broader triangular-ovate base, recurved, nearly as long as the petals; spur rather stout, nearly straight, 1¼–1½ in. long. Column very stout, ¾ lin. long; rostellum linear, 1½ lin. long, deflexed into the spur; gland linear, 1¼ lin. long; stipites distinct, ¾ lin. long.—*Angræcum arcuatum*, Hook. f. in Journ Linn. Soc. vii. 220 (not of Lindl.).

Upper Guinea. Cameroon Mountains, 4000–6000 ft. *Mann*, 2114! *Johnston*, 101!

Near the South African *L. arcuata*, Reichb. f., with which it has been confused, but with a nearly straight spur and thinner leaves.

Fine fruiting specimens from near Sulimania, Sierra Leone, *Scott-Elliot*, 5282! and near Sutah, Ashanti, *Cummins*, 37! apparently represent distinct species of this affinity, but cannot be identified without flowers.

5. **L. Sedeni,** *Reichb. f. in Gard. Chron.* 1878, ix. 138. Leaves broadly ligulate, obliquely tridentate or shortly bilobed, 5–6½ in. long, ¾–1 in. broad. Racemes 5 in. long. Bracts ochreate, lanceolate, acute, half to one-third as long as the pedicels. Flowers white, with a reddish spur. Sepals lanceolate, acuminate. Petals subequal. Lip lanceolate, acute, without lateral teeth; spur wide at the mouth, tapering or filiform towards the apex, acute, nearly straight, longer than the pedicel. Column short; anther abruptly rostrate; rostellum linear, divided only to the middle.—*Angræcum Sedeni*, L. Lind. & Rodigas in Lindenia, iii. 81, t. 135.

East Africa. Culminated specimen, *Seden*.

Near the South African *L. arcuata*, Reichb. f., but with broader and longer leaves, longer and more acute bracts, straight spur, lip without lateral teeth, beaked anther, and bifid rostellum. Only known to me from the original description and the figure

cited above, which is said to represent this species. A specimen, accompanied by a sketch, from the mountains of the Pangani Valley, German East Africa, *Kirk !* apparently belongs here.

6. **L. Whytei,** *Rolfe.* Stem short. Leaves oblong, obtuse, rather broad. Racemes stout, erect, 8–9 in. long, 6–8-flowered. Bracts broadly ovate, subacute, cucullate, 8–10 lin. long. Pedicels $1\frac{1}{4}$–$1\frac{3}{4}$ in. long. Flowers secund. Sepals triangular-lanceolate below, acuminate and much recurved above, 14–19 lin. long. Petals similar to the sepals, but rather smaller. Lip similar to the petals, but concave below, spur somewhat curved, $2\frac{1}{4}$–$2\frac{1}{2}$ in. long, stout below, gradually tapering upwards. Column very stout, 2 lin. long.

Mozamb. Dist. British Central Africa : Mlanje Plateau, *Whyte,* 102 !

The habit of the plant is described from a photograph. A fruiting specimen collected by *Scott-Elliot* during the Ruwenzori Expedition, without locality, may belong here.

7. **L. Erythrææ,** *Rolfe.* Stem 3 in. high. Leaves 8–9, linear-oblong, shortly, obtusely, and unequally bilobed, 5–6 in. long, 5–6 lin. broad. Raceme arcuate, 3 in. long, with 2 or 3 broad, basal sheaths 6–7-flowered. Bracts ovate-oblong, subacute. Capsules clavate-oblong, stoutly pedicelled, 1–$1\frac{1}{4}$ in. long.—*Angræcum schimperianum,* Schweinf. in Bull. Herb. Boiss. ii. App. ii. 90 (not Reichb. f.).

Nile Land. Eritrea : Ginda, near Girsa, 1900 ft., *Schweinfurth,* 387 ! Ginda Valley, 3200–4900 ft., *Schweinfurth,* 2143 !

This is very different from *Angræcum schimperianum,* Reichb. f., to which it is referred by Schweinfurth ; and although the specimen seen is only in fruit, the habit is so characteristic as to leave little doubt that this is its proper affinity.

8. **L. ringens,** *Reichb. f. in Gard. Chron.* 1878, x. 266. Plant dwarf, 3 in. high. Leaves cuneate-oblong, obtusely bilobed, 3 in. long, 1 in. broad near the apex. Racemes few-flowered, secund, 3 in. long. Bracts triangular, considerably shorter than the long, pedicelled ovary. Flowers yellowish-white. Sepals triangular, reflexed or recurved. Petals rhomboid-ligulate, reflexed. Lip rhomboid-lanceolate, with a blunt angle on each side before the mouth of the spur ; spur ample, cylindrical or filiform, obtuse, more than twice as long as the pedicels, $1\frac{1}{2}$ in. long. Column short ; rostellum short, not beaked.

Upper Guinea. Cameroons : cultivated specimens.

Flowered in the Botanic Garden, Berlin, in 1878. Only known to me from the original description, where it is said to form a connecting link between the *L. arcuata* and the *L. filicornis* groups, but to differ from both of them by its short, unbeaked rostellum.

9. **L. bistorta,** *Rolfe.* Stems climbing, rooting. Leaves linear-oblong, shortly and unequally bilobed, 3–5 in. long, $\frac{3}{4}$–$1\frac{1}{4}$ in. broad ; lobes rounded. Racemes few-flowered, $2\frac{1}{4}$ in. long. Bracts broadly tubular, 2 lin. long ; apex obtuse and suboblique. Pedicels 4 lin. long. Flowers secund. Sepals ovate-lanceolate, subattenuate at the apex,

acute, 4 lin. long; lateral suboblique. Petals a little narrower than the sepals. Lip ovate-lanceolate, subacute; spur elongate, looped in the middle owing to the apex remaining within the bracts, 9–10 lin. long. Column very short; gland lanceolate-linear, 1½ lin. long; stipites short, slender, curved; rostellum bipartite.—*Angræcum bistortum*, Rolfe in Kew Bulletin, 1893, 65.

Upper Guinea. Lagos: cultivated specimens, *Moloney !*

Flowered at Kew in 1893.

10. **L. Aschersoni,** *Durand & Schinz, Conspect. Fl. Afr.* v. 48. Plant caulescent. Leaves oblong-linear, very straight, firm, 6 in. long, 5–6 lin. broad; base a little dilated; apex bilobed. Scapes half as long as the leaves, straight, about 6-flowered. Bracts ochreate, nearly orbicular, very obtuse. Flowers a third as large as those of *L. chailluana*, Reichb. f. Sepals triangular, acuminate; dorsal straight; lateral reflexed at the apex, with obtuse angles on their dorsal margins. Petals much like the sepals. Lip also similar to the sepals but much more shell-shaped; spur with ample mouth, then elongated and sigmoid, with a double curve, and nearly as long as the pedicels. Column very short; rostellum descending, emarginate or slightly bipartite; stipites 2, linear, a little dilated above, descending into the spur.—*Angræcum Aschersoni*, Kränzl. in Mitth. Deutsch. Schutzgeb. ii. (1889) 157.

Upper Guinea. Cameroons.

Only known to me from the original description, but seems allied to the preceding.

11. **L. trachypus,** *Kränzl. in Engl. Jahrb.* xix. 253. Roots very long. Stems about 1¼ in. long, thick. Leaves numerous, ensiform, curved, reflexed, acute, 4 in. long, 5 lin. broad. Racemes a little shorter than the leaves, secund, floriferous to the base. Bracts ochreate, obtuse or retuse, much shorter than the densely villous ovary and pedicels. Flower 5 lin. diam. Dorsal sepal large, oblong, acuminate; lateral and the petals a little narrower. Lip very similar to the petals; spur wide, extinguisher-shaped, attenuated and suddenly hooked at the apex. Column very short; anther much produced, retuse; rostellum bipartite; stipites in pairs, distinct to the base.

Upper Guinea. Cameroons: Yaunde, on trees among lichens, *Zenker*, 420.

Only known to me from the original description, but said to be allied to *L. Monteiræ*, Reichb. f.

12. **L. Monteiræ,** *Reichb. f. in Linnæa*, xli. 76. Stems 4 in. or more long. Leaves oblong, obovate-oblong or somewhat cuneate towards the base, 5–8 in. long, 1¼–1¾ in. broad; apex unequally and obscurely bilobed; lobes obtuse. Racemes 6–12 in. long, many-flowered. Bracts broadly ovate, cucullate, subobtuse, 3–4 lin. long. Pedicels 6–9 lin. long. Sepals lanceolate, acuminate, recurved, 5–6 lin. long. Petals a little smaller than the sepals. Lip lanceolate, acuminate, broader at the extreme base, 4–5 lin. long; spur stoutish at the base, attenuate upwards, 1¼–1¾ in. long. Column very stout, 1 lin. long; rostellum deflexed into the spur, 1½ lin.

long, shortly bifid at the apex; gland linear, 2½ lin. long; stipites slender.—*Angræcum antennatum*, Kränzl. in Engl. Jahrb. xvii. 61.

Upper Guinea. Lagos, *Moloney !* Cameroons: Barombi, *Preuss*, 418 !
Lower Guinea. Angola: Bembi, *Monteiro !*

I cannot find any character by which to distinguish *Angræcum antennatum*, Kränzl. An imperfect cultivated specimen from Mr. Christy's garden, received from Liberia, belongs to the same or a closely allied species.

13. **L. buchholziana,** *Durand & Schinz. Conspect. Fl. Afr.* v. 48. Stems 4–5½ in. long. Leaves oblong, 4½–5½ in. long, ¾–1 in. broad, fairly thick; apex unequally bilobed; lobes obtuse. Racemes straight, 7–8 in. long, 15–20-flowered, secund. Bracts sheathing or ochraceous below, nearly orbicular, truncate, apiculate; upper a little longer, one-third as long as the ovary. Pedicels 5–6 lin. long. Sepals ovate, produced into a long recurved point, 4 lin. long, 1 lin. broad; lateral slightly oblique, with an obtuse angle on the lower margin. Petals slightly smaller and more slender. Lip like the petals; spur straight, uniform, rather stout, about 11 lin. long. Column 1 lin. long; rostellum 1 lin. long, 5–6 toothed at the apex, with anther descending into the spur; gland 2 lin. long; stipites dilated above.—*Angræcum buchholzianum*, Kränzl. in Engl. Jahrb. vii. 334.

Upper Guinea. Cameroons: Mungo, *Buchholz.*

Only known to me from the original description, but said to be near *L. chailluana*, Reichb. f.

14. **L. henriquesiana,** *Rolfe.* Stems woody, branched, stout, about 3 in. long, with strong roots. Leaves narrowly linear, subacute, not bilobed, about 5½ in. long, 2 lin. broad. Racemes short, spreading, 1 in. long. Bracts ample, ovate, obtuse, 6-nerved. Flowers yellow, about the same size as those of *L. arcuata*, Reichb. f. Sepals ovate, acuminate, 2 lin. long. Petals similar to but a little narrower than the sepals. Lip ovate, acuminate; apex revolute; spur narrowly funnel-shaped at the base, attenuate above, pendulous, 1¾–2 in. long. Column short; rostellum oblong, truncate; stipites elongate-linear, with a rounded appendage at their junction with the entire base; gland nearly 2 lin. long.—*Angræcum henriquesianum*, Ridl. in Bolet. Soc. Brot. v. 231.

Lower Guinea. Princes Island, 350 ft. *Newton ! Barter*, 2019 ! Also cultivated specimens !

Near *L. arcuata*, Reichb. f., but the leaves are much narrower. The original specimen is in very poor condition, but has narrower, more fleshy leaves, and hence it remains uncertain if the other specimens referred here are identical.

15. **L. engleriana,** *Kränzl. in Engl. Jahrb.* xix. 254 (*in note*). Stemless. Roots dense, long, slightly villous. Leaves linear, obtuse, subequally lobed, firm, shining, 4–4¾ in. long, 3½–4½ lin. broad. Racemes strict, scarcely longer than the leaves, 10–12-flowered. Bracts broadly ovate-triangular, apiculate; the lower cucullate, apiculate, 2 lin. long. Pedicels 4 lin. long. Sepals oval-lanceolate, acuminate,

3 lin. long. Petals similar to but a little smaller than the sepals. Lip broadly triangular-ovate, acuminate, as long as the petals, $2\frac{1}{2}$ lin. broad; spur slender, 2–$2\frac{1}{4}$ in. long, ascending. Column rather slender, 2 lin. long; anther crested, oblong, retuse, hyaline, 1 lin. long, $\frac{1}{2}$ lin. broad; stipites of pollinia subparallel, filiform; rostellum trifid; middle lobe a little shorter than the side.—*Angræcum englerianum*, Kränzl. in Engl. Jahrb. vii. 333; xvii. 61, t. 4.

Upper Guinea. Cameroons: Mungo, *Buchholz*.

16. **L. muscicola,** *Rolfe.* Stems short, stout, about 5-leaved; roots very thick. Leaves linear, conduplicate, rigid, 3–$3\frac{1}{4}$ in. long; apex obtuse or obscurely bilobed. Scapes suberect, 5–6-flowered, 3–5 in. long. Bracts broadly ovate, obtuse or apiculate, 3–$3\frac{1}{2}$ lin. long. Pedicels 8–9 lin. long. Sepals ovate-lanceolate, subobtuse or apiculate, $3\frac{1}{2}$–4 lin. long. Petals slightly smaller than the sepals. Lip broadly rhomboid-ovate, apiculate, 4 lin. long; spur slender, $2\frac{1}{2}$–4 in. long. Column short; rostellum long, slender, bifid.—*Aëranthus muscicola*, Reichb. f. in Flora, 1865, 190; *Mystacidium muscicolum*, Durand & Schinz, Conspect. Fl. Afr. v. 54.

Lower Guinea. Angola: Pungo Andongo; rocks of Tunda, Quilombo, *Welwitsch*, 699!

17. **L. rhipsalisocia,** *Rolfe.* Stems short, with stout roots. Leaves equitant, recurved, linear, subacuminate, 5–$5\frac{1}{2}$ in. long. Racemes $2\frac{1}{2}$–$3\frac{1}{2}$ in. long, recurved, about 10-flowered, secund. Bracts very broadly ovate, cucullate, obtuse or apiculate, $1\frac{1}{4}$–2 lin. long. Pedicels $\frac{3}{4}$ in. long. Sepals lanceolate, acute, 4 lin. long. Petals slightly smaller than the sepals. Lip ovate-lanceolate, acute, broader than the petals; spur stout at the base, tapering and strongly hooked above, 5 lin. long. Column stout; stipites of pollinia distinct, slender; gland broadly rounded.—*Angræcum rhipsalisocium*, Reichb. f. in Flora, 1865, 189.

Lower Guinea. Angola: Golungo Alto; in the primæval woods of Sobato de Quilombo, *Welwitsch*, 662! (not 692 as quoted by Reichenbach).

18. **L. Wittmackii,** *Rolfe.* Stems 2 lin. broad. Leaves very thick, distant, ovate or oblong; apex more or less unequal; apices of lobes $\frac{1}{2}$–2 lin. apart, obtuse; sheaths rugose, with black hairy warts; limb of leaf nearly three times as long as the internodes. Inflorescence 2-flowered, opposite the leaves and much shorter, with some very short scales at the base. Pedicels pilose with black hairs. Flowers $2\frac{1}{2}$ lin. diam., spreading. Sepals ovate, acute, sparsely pilose outside with black hairs; dorsal slightly longer than the lateral. Petals as long as the sepals, but about half as broad, linear, acute. Lip linear; apex triangular, acute; disc with a pair of fleshy calli behind the orifice of the spur; spur straight or slightly curved, 5 lin. long. Column nearly globose, very short.—*Angræcum Wittmackii*, Kränzl. in Mitth. Deutsch. Schutzgeb. ii. (1889), 158; Durand & Schinz. Conspect. Fl. Afr. 47.

Upper Guinea. Cameroons, *Braun*, 2.

Only known to me from the original description, but apparently allied to the preceding.

19. **L. ashantensis,** *Reichb. f. in Walp. Ann.* vi. 908. Stems tall, climbing, leafy, with stout roots. Leaves oblong or ovate-oblong, 3–3¾ in. long, 10–13 lin. broad; apex very oblique but scarcely bilobed. Racemes axillary, slender, many-flowered, 3¼–4 in. long. Bracts broadly ovate, apiculate, amplexicaul, reflexed, 1 lin. long. Pedicels 2 lin. long. Flowers orange-buff. Sepals oblong-lanceolate, subobtuse, 2½ lin. long. Petals smaller and narrower than the sepals. Lip broadly subpandurate, obtuse or apiculate, 2 lin. long; margins crenulate and reflexed; spur subclavate, 3 lin. long, slightly curved and somewhat compressed. Column stout, ¾ lin. long; pollinia with 2 clavate stipites and a small oblong gland; rostellum rostrate.—*Angræcum ashantense*, Lindl. in Bot. Reg. 1843, Misc. 56.

Upper Guinea. Ashanti: cultivated specimen, *Loddiges!*:

Originally flowered with Messrs. Loddiges, in 1843. The sepals and petals are not galeate, as described by Lindley.

20. **L. Papagayi,** *Reichb. f. in Flora*, 1865, 189. Stems tall, climbing, leafy. Leaves oblong or oblong-lanceolate, 3½–5 in. long, ¾–1¼ in. broad; apex oblique, more or less bidentate. Racemes axillary, slender, 3½–4 in. long, many-flowered. Bracts broadly ovate, apiculate, ochreate at the base, ¾ lin. long. Pedicels 2 lin. long. Sepals and petals lanceolate-subacute, 2½ lin. long. Lip subpandurate-oblong, obtuse or apiculate, crenulate-undulate in front, 2½ lin. long; spur elongate, slender, slightly curved, 4½ lin. long. Column stout, ¾ lin. long.

Lower Guinea. Princes Island: shady rocks on the peak of Papagayo, 3000 ft., *Welwitsch*, 629! *Mann*, 1148!

Near *L. ashantensis*, Reichb. f., but differs in its narrow segments and long spur. Welwitsch notes the stems as "pendulous, very slender, 10–12 ft. long."

21. **L. Bakeri,** *Durand & Schinz, Conspect. Fl. Afr.* v. 48. Racemes slender, nodding, 5–6 in. long. Bracts very small, ochreate, obtuse. Pedicels 2 lin. long. Flowers 3–3½ lin. diam. Lateral sepals slightly oblique, acute. Petals slightly smaller than the sepals, spreading; margin entire, not denticulate. Lip cordate-ovate, truncate-emarginate, 2 lin. long, slightly broader, denticulate at the sides; disc with a small, recurved tooth at the base; spur descending, straight, compressed, obtuse, nearly twice as long as the lip, constricted at the base. Column short; rostellum long, linear.—*Angræcum Bakeri*, Kränzl. in Mitth. Deutsch. Schutzgeb. ii. (1889) 159.

Upper Guinea. Cameroons, *Braun.*

Allied to *L. ashantensis*, Reichb. f., but differs amongst other characters in the shape of the lip. I have not seen it.

22. **L. acuta,** *Rolfe.* Plant caulescent. Stem elongate. Roots long, stout. Leaves oblong or ovate-oblong, shortly and obliquely bilobed, obtuse, 3–4 in. long, 7–12 lin. broad; upper lobe 4–5 lin.

longer than the lower. Racemes numerous, sometimes a little fascicled, slender, many-flowered, 3–6 in. long. Bracts ovate, amplexicaul, obtuse, 1–1½ lin. long. Sepals and petals lanceolate, acuminate, subequal, 3–4 lin. long. Lip obovate, cuspidate, as long as the sepals but broader; margin minutely fimbriate; spur pendulous, 4 lin. long, slender, a little stouter near the apex, subacute. Column stout; stipites slender; pollinia obovate; gland rounded.—*Angræcum acutum*, Ridl. in Bolet. Soc. Brot. v. 199, t. C. fig. b.

Lower Guinea. St. Thomas, Nova Moka, 2200 feet., *Quintas*, 3!

Allied to *L. ashantensis*, Reich. f., but differs from all its allies in the shape and details of the lip.

23. **L. subclavata,** *Rolfe.* Plant caulescent. Leaves sessile, oblong, 4 in. long, 1¼ in. broad; base oblique, cordate on one side; apex unequally and obtusely bilobed. Racemes a little longer than the leaves, 16–20-flowered. Bracts minute. Pedicels 3 lin. long. Sepals lanceolate, acute. Petals similar to but a little shorter than the sepals. Lip broadly elliptic-ovate, acute, 3 lin. long; margin denticulate; spur subclavate, 3 lin. long. Column short and stout.—*Angræcum subclavatum*, Rolfe in Bolet. Soc. Brot. ix. 140.

Lower Guinea. St. Thomas, *Quintas!*

Allied to *L. ashantensis*, Reichb. f. The flowers are in a young state.

24. **L. bidens,** *Rolfe.* Stems long and climbing, with strong roots. Leaves oblong or ovate-oblong, obliquely and unequally bilobed, with subacute or obtuse lobes, 2¼–4½ in. long, ¾–1¾ in. broad. Racemes slender, 3½–6½ in. long, many-flowered. Bracts broadly triangular-ovate, obtuse, ⅓–½ lin. long. Pedicels 1½–2 lin. long. Flowers white. Sepals lanceolate or elliptic-oblong, acute or subobtuse, 2 lin. long. Petals a little smaller than the sepals. Lip broadly oblong or quadrate-oblong, shortly trilobed at the apex, 2¼–2½ lin. long; side lobes rounded; front lobe cuspidate and smaller; spur about as long as the lip, clavate or subclavate. Column stout, ½ lin. long.—*Limodorum bidens*, Afzel. ex Sw. in Vet. Acad. Handl. Stockh. 1800, 243 (name only); Pers. Syn. ii. 521.

Upper Guinea. Sierra Leone: near Wilberforce, 250 ft., on rocky banks by stream side, *Johnston*, 101! and without locality, *Afzelius!* Gold Coast: Cape Coast Castle, *Vogel!* Cameroons: Barombi, *Preuss*, 335! Bipinde, *Zenker*, 1062! Efulen, *Bates*, 354!

25. **L. monodon,** *Reichb. f. in Walp. Ann.* vi. 908. Stems not seen. Leaves ovate-oblong, shortly and obliquely bilobed, 3 in. long. 1 in. broad. Racemes 3 in. long, many-flowered. Bracts broadly ovate, apiculate, amplexicaul, ½ lin. long. Pedicels 2 lin. long. Flowers reddish. Sepals and petals ovate-oblong, subacute, 2 lin. long. Lip suborbicular, subconcave, 2 lin. long, with a short, blunt tooth near the base; spur slightly curved, subclavate, 3 lin. long. Column stout, ¾ lin. long; pollinia on distinct, slender stipites; rostellum subulate,

decurved.—*Angrœcum monodon*, Lindl. in Paxt. Fl. Gard. ii. 102, fig. 187 (not in Journ. Linn. Soc. vi. 135).

Lower Guinea. Gaboon: cultivated specimen, *Pescatore!*

Only known from the original specimen.

26. **L. pertusa,** *Reichb. f. in Walp. Ann.* vi. 908. Stems stout, short, 2–6 in. long, clothed with the persistent, imbricate leaf-bases. Leaves ligulate or linear-oblong, shortly and very unequally bilobed, 4–8 in. long, 6–10 lin. broad. Racemes stout, erect or spreading, 6–9 in. long, dense-flowered almost to the base. Bracts ochreate, very short, alternate. Pedicels 1 lin. long. Flowers small, distichous, white, furfuraceous. Sepals broadly ovate, obtuse, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. long. Petals similar to but a little smaller than the sepals. Lip broadly unguiculate, suborbicular-obovate, obtuse or apiculate, slightly reflexed, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. long; spur stout, clavate, dorsally compressed, $1\frac{1}{2}$–2 lin. long. Column very stout, 1 lin. long; pollinia with a crescent-shaped gland, and 2 clavate, flattened stipites, denticulate at the margins.—*Angrœcum pertusum*, Lindl. in Hook. Comp. Bot. Mag. ii. 205; Journ. Linn. Soc. vi. 135; Bot. Mag. t. 4782.

Upper Guinea. Sierra Leone: cultivated specimen, *Loddiges!* Lagos, *Moloney!* Niger Delta: Brass, *Barter*, 1826! Nun River, *Mann*, 524! Cameroons: Efulen, *Bates*, 395!

27. **L. clandestina,** *Rolfe.* "Caulescent." Leaves ensiform, recurved, thick, 7 in. long, 3–4 lin. broad, very obliquely bidentate, with the lower tooth $1\frac{1}{4}$ lin. below the upper. Spike horizontal, dense. Bracts ovate, coriaceous, rigid. Flowers furfuraceous; sepals and petals white; lip green. Sepals broadly ovate-oblong, obtuse, concave, 2 lin. long. Petals linear-oblong, obtuse, 2 lin. long. Lip trilobed, concave, 2 lin. long; side lobes ample, oblong, obtuse; front lobe ovate, apiculate, obscurely crenulate, concave; spur clavate, inflated at the apex, curved, $2\frac{1}{2}$ lin. long. Column stout, $1\frac{1}{2}$ lin. long; rostellum elongate, bipartite, lobes subulate, descending at the base, sharply inflexed at the middle, and then ascending.—*Angrœcum clandestinum*, Lindl. in. Hook. Comp. Bot. Mag. ii. 206; Reichb. f. in Walp. Ann. vi. 906.

Upper Guinea. Sierra Leone: cultivated specimen, *Loddiges!*

An imperfectly known species, apparently of this affinity.

28. **L. gabonensis,** *Rolfe.* Leaf linear-oblong, shortly, obtusely, and unequally bilobed, 5 in. long, 10 lin. broad. Raceme 6 in. long, dense, many-flowered. Bracts alternate, broadly tubular, nearly truncate or apiculate, $\frac{1}{2}$–$\frac{3}{4}$ lin. long. Pedicels 1 lin. long. Lateral sepals broadly elliptic-oblong, obtuse, 1–$1\frac{1}{4}$ lin. long; dorsal, and the petals, suborbicular, 1 lin. long. Lip suborbicular, emarginate, 1 lin. long; spur cylindrical, slightly narrower near the base, $3\frac{1}{2}$ lin. long. Column stout, $\frac{1}{2}$ lin. long.

Lower Guinea. Gaboon: cultivated specimen!

Flowered in the Jardin des Plantes, Paris, in 1886.

29. **L. multiflora,** *Rolfe.* Leaf linear-oblong, shortly and unequally bilobed, with an acute upper lobe, $2\frac{3}{4}$ in. long, 4 lin. broad. Racemes $2\frac{1}{2}$ in. long, dense, many-flowered. Bracts very broadly tubular, truncate, apiculate, $\frac{1}{2}$ lin. long. Pedicels 1 lin. long. Sepals elliptic-oblong, obtuse, 1–$1\frac{1}{4}$ lin. long. Petals orbicular, 1 lin. long. Lip broadly ovate, subacute, 1–$1\frac{1}{4}$ lin. long; spur cylindrical, scarcely thickened above the middle, 3–$3\frac{1}{2}$ lin. long. Column stout, $\frac{1}{2}$ lin. long.

Mozamb. Dist. German East Africa: Pangani Valley, *Kirk!*

30. **L. pellucida,** *Reichb. f. in Walp. Ann.* vi. 908. Stems short, 7–8-leaved. Leaves oblong-lanceolate, obliquely subobtuse or obscurely bilobed, attenuate below, 9–15 in. long, 1–$2\frac{3}{4}$ in. broad. Racemes long, slender, drooping, 1–2 ft. long, sometimes shorter, many-flowered from the base; flowers alternate. Bracts very broadly ovate, subobtuse or apiculate, $2\frac{1}{2}$–5 lin. long. Pedicels much shorter than the bracts. Flowers pellucid white. Sepals ovate-oblong, subobtuse, entire, 4–$5\frac{1}{2}$ lin. long. Petals similar to the sepals but fimbriate. Lip broadly subpandurate-ovate, truncate or retuse, 4–$5\frac{1}{2}$ lin. long and nearly as broad; margin fimbriate, pellucid; disc with a small, erect, basal tooth; spur curved, lying close under the limb of the lip, stout below the middle, then gradually tapering to the apex, about the same length as the limb of the lip. Column stout, $1\frac{1}{2}$ lin. long; rostellum triangular, subulate, bifid, short; pollen with 2 slender stipites on an oblong gland.—*Angræcum pellucidum*, Lindl. in Bot. Reg. 1844, t. 2; Gard. Chron. 1895, xviii. 158, with plate; *A. Althoffii*, Kränzl. in Mitth. Deutsch. Schutzgeb. ii. (1889), 160; *Listrostachys Althoffi*, Durand & Schinz., Conspect. Fl. Afr. v. 47.

Upper Guinea. Sierra Leone: Lumbaraya, *Scott-Elliot*, 5005! and without precise locality, *Loddiges! Whitfield!* Lagos, *Moloney!* Lower Niger: Onitsa, *Barter*, 1757! Brass, *Barter*, 37! Cameroons: Barombi, *Preuss*, 445! Bipinde, *Zenker*, 1053! Yaunde, *Zenker & Staudt*, 417!

31. **L. divitiflora,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 158. Stems curved, woody, leafy only at the apex. Leaves 1 or 2, oblong or oblong-lanceolate, 6 in. long, $1\frac{1}{2}$ in. broad; apex very unequal and obtuse. Racemes many, deflexed, floriferous from the base to the apex. Bracts ochreate, retuse. Flowers 4–5 lin. diam., white. Sepals ligulate from a slightly broader base, acute or acuminate. Petals similar to but a little smaller than the sepals. Lip nearly quadrate, retuse, with an apiculus in the angle; base transversely plicate, without a basal tooth; spur obtuse, shorter than the lip. Column stout; rostellum produced. —Kränzl. in Engl. Jahrb. xxii. 28.

Nile Land. British East Africa: Ituri River, 2900 ft., *Stuhlmann*, 2636.

Only known to me from the original description, but said to be allied to the preceding.

32. **L. vagans,** *Rolfe.* "Habit of a gigantic *Vanda*." Leaves oblong or elliptic-oblong, 8–$9\frac{1}{2}$ in. long, $1\frac{3}{4}$–2 in. broad; apex slightly oblique and subobtuse or apiculate. Racemes slender, pendulous,

9–12 in. long, many-flowered. Bracts ochreate, very short, broad, truncate, almost obsolete. Pedicels 2 lin. long. Flowers yellow. Sepals and petals oblong, obtuse, fleshy, $1\frac{3}{4}$ lin. long. Lip broadly oblong; apex tridentate or obtuse, fleshy; spur curved, slender at the base, 5 lin. long; apex clavately inflated. Column very stout, $\frac{3}{4}$ lin. long; stipites "linear, didymous."—*Angræcum vagans*, Lindl. in Journ. Linn. Soc. vi. 135.

Lower Guinea. Princes Island, *Barter*, 1988!

According to Barter, it covers many of the small islets which abound near the shore, and has yellow and insignificant flowers.

Allied to *L. vesicata*, Reichb. f., but the leaves are very different. Lindley describes the lip as like the sepals and petals, but I find it broader and tridentate.

33. **L. thomensis,** *Rolfe.* Acaulescent. Leaves linear, 5–6 in. long, 5–7 lin. broad. Racemes pendulous, 1 ft. long, many-flowered. Bracts broadly ovate, $1\frac{1}{2}$ lin. long. Pedicels 3 lin. long. Dorsal sepal elliptic-oblong, obtuse, $2\frac{1}{2}$ lin. long; lateral oblong, subacute. Petals linear, obtuse. Lip ovate, obtuse, 2 lin. long; spur subclavate, slightly curved, 4 lin. long. Column short; pollen not seen. Capsule pedicelled, triquetrous, curved, 4–5 lin. long.—*Angræcum thomense*, Rolfe in Bolet. Soc. Brot. ix. 141.

Lower Guinea. St. Thomas, *Quintas!*

Allied to *L. ichneumonea*, Reichb. f.

34. **L. ichneumonea,** *Reichb. f. in Gard. Chron.* 1887, ii. 681 (*in note*). Stems short, thick. Leaves oblong-lanceolate, coriaceous, 9–12 in. long, 1–$1\frac{1}{2}$ in. broad; apex suboblique and subobtuse. Racemes pendulous, slender, $1\frac{1}{4}$–$1\frac{1}{2}$ ft. long, many-flowered. Bracts broadly ovate, apiculate, $\frac{3}{4}$ lin. long. Pedicels 2 lin. long. Sepals ovate-oblong, subobtuse. Petals linear-oblong, subobtuse or apiculate, $2\frac{1}{2}$ lin. long. Lip oblong, $2\frac{1}{2}$ lin. long; apex shortly trilobed; front lobe, oblong, obtuse; side lobes broad, 3-toothed or somewhat truncate; spur curved, 8 lin. long, basal half slender, apical half inflated, clavate-oblong, laterally compressed. Column stout, 3 lin. long; pollinia with 2 slender stipites attached to a single gland.—*Angræcum ichneumoneum*, Lindl. in Journ. Linn. Soc. vi. 136; Reichb. f. in Gard. Chron. 1887, ii. 681.

Upper Guinea. Niger Delta: Banks of the Nun River, *Mann*, 520!

35. **L. vesicata,** *Reichb. f. in Flora*, 1865, 190. Stems very short. Leaves elongate-linear, a little attenuate and subobtuse, subcuneate below, 9–11 in. long, 5–10 lin. broad. Racemes slender, pendulous, 6–11 in. long, many-flowered. Bracts opposite, $\frac{1}{2}$ lin. long, each pair united into a single, ochreate, truncate, amplexicaul body. Pedicels 2 lin. long. Flowers green, opposite. Sepals ovate, apiculate, $1\frac{1}{2}$ lin. long, fleshy; dorsal broadly cucullate. Petals ovate-oblong, apiculate, fleshy, smaller than the sepals. Lip oblong or linear-oblong, subobtuse, fleshy, base broader and subauriculate, $1\frac{1}{2}$ lin. long; spur curved, slender at the base, apex obovoidly inflated, subcompressed,

4–5 lin. long. Column very stout, ¾ lin. long; rostellum triangular; pollinia with 2 slender stipites, sometimes slightly adhering at the broader apex; gland oblong.—*Angræcum vesicatum*, Lindl. in Bot. Reg. 1843, Misc. 6; Journ. Linn. Soc. vi. 134; Reichb. f. in Walp. Ann. vi. 905.

Upper Guinea. Ashanti, *Loddiges!* Gold Coast: cultivated specimens, *Bull! Sander!* Lower Niger: Asaba, *Barter*, 1839! Cameroons: Yaunde, *Zenker*, 610! Fernando Po, *Mann*, 646!

36. **L. fragrantissima,** *Reichb. f. in Flora*, 1865, 189. Leaves ensiform-falcate, very coriaceous, 6–11 in. long, 8–12 lin. broad; apex oblique, very obscurely bilobed. Racemes elongate, rather stout, about 1 ft. long, many-flowered. Bracts very shortly triangular, obtuse, confluent at the sides into a ring. Pedicels 1½ lin. long. Flowers opposite. Sepals ovate-lanceolate, very acuminate; dorsal 5 lin. long; lateral 6 lin. long. Petals slightly shorter than the dorsal sepal. Lip broadly pandurate-ovate or nearly quadrate, strongly apiculate, crenulate, 3½–4 lin. long; spur 5 lin. long, base slender, apex suddenly and obliquely inflated, broad, compressed, half as broad as long. Column stout, 1½ lin. long; rostellum subulate, short; pollinia with 2 slender stipites and a rounded gland.

Lower Guinea. Angola: Pungo Andongo; rocks of Pedra Cabondo, 3400 ft., *Welwitsch*, 701! 702!

According to Welwitsch, it hangs from moss- and lichen-covered rocks, and from branches at the foot of rocks, and is associated with *Rhipsalis* and *Sarcostemma*.

37. **L. Welwitschii,** *Reichb. f. in Flora*, 1865, 190. Stems woody. Leaves closely imbricate, erect, rigid, conduplicate, shortly and subequally bilobed, 4–6 in. long. Racemes stout, elongate, pendulous, many-flowered, 9–10 in. long. Bracts opposite, broadly ovate-orbicular, very obtuse, 1–1½ lin. long; sheaths at the base of the racemes longer and more ochreate than the bracts. Pedicels 1½–2 lin. long. Flowers opposite. Sepals oblong-lanceolate, subacuminate, acutely keeled near the apex, 6–7 lin. long. Petals very similar to the sepals, but less acuminate, and not keeled, 5–6 lin. long. Lip broadly pandurate-ovate, retuse, with a carinate apiculus in the angle, denticulate, 5 lin. long and nearly as broad; spur clavate, 5 lin. long. Column stout, 1½ lin. long; rostellum subulate, shortly bifid; pollinia with a pair of slender, curved stipites and a rounded gland.

Lower Guinea. Angola: Pungo Andongo, frequent on rocks, *Welwitsch*, 703!

The leaves above described are attached to the specimen in the British Museum. Other leaves mixed with the specimens are very different, and appear to belong to *L. fragrantissima*, Reichb. f.

38. **L. Kirkii,** *Rolfe.* Stem stout, pendulous. Leaves linear-oblong, obliquely subobtuse, somewhat falcate, 6–14 in. long, 1–1¼ in. broad. Scapes slender, 1–1¼ ft. long, lax, many-flowered. Bracts opposite, united in pairs into a broad ring, subobtuse, ¾–1 lin. long. Pedicels 2 lin. long. Sepals and petals ovate-lanceolate, acute, 3 lin.

long. Lip broadly oblong, obtuse, 3 lin. long. Spur $3\frac{1}{2}$ lin. long, slender at the base, suddenly bent and obliquely inflated into an ovate-oblong, subacute sac. Column stout, 1 lin. long.

Mozamb. Dist. German East Africa: Usambara, at Magila, banging from a tree over a waterfall, in a dark forest, *Kirk!*

In the shape of the spur this much resembles the preceding, but it is very different in other respects.

39. **L. urostachya,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 158. Stems rather stout. Leaves about 7 lin. distant, linear-oblong, obtuse, obscurely bilobed, 4–$4\frac{3}{4}$ in. long. Spikes elongate, with a few scales at the base, the upper part developed gradually after the lower flowers expand. Bracts triangular, retuse, shorter than the ovary. Flowers amongst the smallest in the genus, verticillate. Sepals and petals rounded, obtuse, concave. Lip broadly ovate, obtuse; spur filiform, slightly curved, stoutish, much longer than the ovary.—Kränzl. in Engl. Jahrb. xxii. 29.

Mozamb. Dist. German East Africa: Usambara, *Holst*, 4001.

Only known to me from the original description, but said to differ from *L. pertusa*, Reichb. f., in the length of the internodes and spur.

40. **L. Virgula,** *Rolfe.* Stems ascending, straight, 10 in. long, many-leaved. Leaves linear, chartaceous; apex unequally bilobed. Racemes much shorter, few-flowered; rhachis very flexuous. Bracts minute, triangular, acute. Flowers scarcely 1 lin. diam. Dorsal sepal ovate, cucullate; lateral much larger than the dorsal, triangular, produced behind into a small, obtuse, chin-like process. Petals linear-oblong, acute. Lip minute, triangular, cucullate; base funnel-shaped, gradually extending into a curved, fairly stout spur, 5 lin. long. Column stout; rostellum 2-armed; pollinia not seen.—*Angræcum Virgula*, Kränzl. in Engl. Pfl. Ost-Afr. C. 157; Kränzl. in Engl. Jahrb. xxii. 27.

Nile Land. British East Africa: Ruwenzori, 8200 ft., *Stuhlmann*, 2336.

Only known to me from the original description, but said to somewhat resemble *L. subulata*, Reichb. f. in habit.

41. **L. graminifolia,** *Kränzl. in Eng. Pfl. Ost-Afr. C.* 158. Stems short, thick, fusiform. Leaves very narrowly linear, 10 in. long, 1–$1\frac{1}{2}$ lin. broad. Racemes flexuous, few-flowered. Bracts minute, triangular. Flowers white, 11 lin. diam. Sepals narrow, very acuminate from an ovate base. Petals similar to, but only half as large as, the sepals. Lip like the sepals, but a little broader; spur very slender, filiform, elongate, five times as long as the sepals. Column short; rostellum deflexed, dilated at the apex into a shield-like surface; gland large, scutelliform; stipites 2.—Kränzl. in Engl. Jahrb. xxii. 29.

Mozamb. Dist. German East Africa: Usambara; Mbaludorf, on trees, 5900 ft., *Holst*, 2607.

Only known to me from the original description, but remarkable for the shape of the rostellum.

42. **L. capitata,** *Reichb. f. in Flora*, 1865, 190. Stems very short, 5–8-leaved. Leaves linear-oblong, shortly and unequally bidentate, 7–9 in. long, 8–10 lin. broad; base conduplicate. Bracts oblong, obtuse, membranous, 4–6 lin. long. Pedicels 3 lin. long. Flowers in dense, globose, sessile, radical heads, 1 in. long, pale rose-coloured. Sepals and petals oblong, obtuse, 2 lin. long. Lip broadly ovate, cucullate, about 2 lin. long; spur stout, funnel-shaped at the base, clavate-inflated at the apex, $3\frac{1}{2}$ lin. long.—*Angræcum capitatum,* Lindl. in Journ. Linn. Soc. vi. 137.

Upper Guinea. Niger Delta: Brass, *Barter*, 1857!

Specimens from the Nun River, on mangroves, *Barter*, 20106! and from Assin-Yan-Coomassie, Ashanti, *Cummins*, 87! apparently represent nearly allied species.

43. **L. cephalotes,** *Reichb. f. in Gard. Chron.* 1872, 1687. Plant somewhat caulescent. Leaves ligulate, rigid, thick, 6–8 in. long, about 5 lin. broad; apex unequally bilobed. Heads lateral, below the leaves, with imbricate sheaths passing into the bracts. Sepals and petals ligulate. Lip trilobed, crenulate, sheathing the column; side lobes semiovate; front lobe ligulate, retuse, emarginate; spur ample, cylindric, obtuse, constricted in the middle, nearly as long as the pedicel. Column stout; rostellum trifid; middle lobe subulate, short, ascending; side lobes lanceolate; stipites 2, apex cupulate; gland elongate, lanceolate.

West Tropical Africa. Without locality: cultivated specimens.

Flowered in the collection of W. Wilson Saunders in 1872. Described as being very near *L. capitata*, Reichb. f., but the sheaths of the inflorescence broader, the lip hastate at the base, and the spur shorter and stouter. I have not seen it.

44. **L. glomerata,** *Rolfe.* Plant subacaulescent. Leaves linear-oblong, 3–4 in. long, 6–7 lin. broad; apex shortly and unequally bilobed; lobes obtuse or bidenticulate. Racemes subsessile, capitate, 1–$1\frac{1}{4}$ in. long, with several oblong, obtuse, imbricate sheaths at the base. Bracts oblong, obtuse, concave, $\frac{1}{2}$ in. long. Sepals and petals oblong, obtuse, 3 lin. long. Lip suborbicular-oblong, obtuse, 3 lin. long; base subauriculate and clasping the column; spur stout, narrowly funnel-shaped at the base, the upper half subclavate-inflated, 4 lin. long. Column stout, 1 lin. long; pollinia with 2 slender stipites, and a linear-oblong gland; rostellum bilobed; lobes subulate, ascending.—*Angræcum glomeratum,* Ridl. in Gard. Chron. 1885, xxiv. 678.

Upper Guinea. Sierra Leone: cultivated specimens, *Schröder!*

Originally flowered in the collection of Major Lendy, in 1885, and is said to have been introduced by Messrs. F. Sander & Co., through their collector, S. Schröder. A fruiting specimen from Sierra Leone, *Afzelius!* apparently belongs here.

45. **L. Braunii,** *Durand & Schinz, Conspect. Fl. Afr.* v. 48. Plant subacaulescent. Roots thick. Leaves lorate, stout, unequally bilobed, obtuse, 4 in. long, 7 lin. broad; base conduplicate. Racemes congested into a 20–30-flowered head. Bracts oboval, acute, membranous, shorter than the flowers. Flowers 2 lin. diam. Sepals and petals

oboval, obtuse, stout, connivent, 1½–2 lin. long, nearly as broad. Lip transversely oval, or orbicular if flattened out; apex rounded, concave; spur nearly straight, the upper half slightly inflated, 3 lin. long. Column stout; anther retuse; gland linear.—*Angræcum cephalotes*, Kränzl. in Mitth. Deutsch. Schutzgeb. ii. (1889), 156.

Upper Guinea. Cameroons, *Braun.*

Only known to me from the original description. Said to be allied to *L. capitata*, Reichb. f., but only half as large. A fine fruiting specimen from the Cameroon Mountains, 5000 ft., *Mann*, 2123! may possibly belong here.

46. **L. Batesii,** *Rolfe.* Stem stout, erect, ½–1 in. long. Leaves ensiform, compressed, curved, obtuse, 1–2½ in. long, 3–4½ lin. broad. Scapes slender, suberect, dense, many-flowered, secund, 2½–6 in. long. Bracts broadly ovate, apiculate, sheathing below, ¾–1 in. long. Pedicels 1 lin. long. Flowers white. Sepals and petals oblong, obtuse, 1½ lin. long. Lip oblong, obtuse, slightly concave at the base, 1½ lin. long; spur somewhat inflated, lanceolate-oblong, subacute, 1¼ lin. long. Column stout, ¾ lin. long.

Upper Guinea. Cameroons: Efulen, *Bates*, 381!
Lower Guinea. Gaboon: Como River, *Bates*, 463!

47. **L. Zenkeri,** *Kränzl. in Engl. Jahrb.* xix. 252. Plant very small, with a short, stout stem. Leaves ensiform, short, 1½–2 in. long, 2 lin. broad; apex unequal, subacute. Racemes erect, a little longer than the leaves, with retuse, ochreate sheaths at the base. Bracts broadly triangular, acute, half as long as the flowers. Flowers 1 lin. diam. Dorsal sepal oblong, obtuse, with a thickened apiculus; lateral equal, carinate; apex biapiculate, one point being in front of the other. Petals a little broader than the sepals, more slender, very obtuse. Lip ovate-oblong, obtuse, a little contracted above the base; spur as long as the limb, inflated, slightly compressed, obtuse, incurved. Column stout, anther elongate, retuse; pollinia with 2 slightly thickened and excavate stipites.

Upper Guinea. Cameroons: Yaunde, on high trees of the primæval forest, *Zenker*, 623.

Said to be one of the smallest species of the genus, with the habit of *Angræcum Maudæ*, Bolus, which it closely resembles in habit. I have not seen it. A fruiting specimen from Sugarloaf Mountain, Sierra Leone, *Barter!* apparently represents an allied species.

48. **L. iridifolia,** *Rolfe.* Stem short and stout, ½ in. long. Leaves ensiform, compressed, curved, obtuse, ¾–1 in. long. Scapes suberect, slender, 1½–2 in. long, 8–12-flowered, with a few oblong, apiculate sheaths near the base. Bracts triangular-oblong, subacute or apiculate, 1 lin. long. Capsules elliptic-oblong, 2½ lin. long.—*Angræcum? aff. A. saccifero*, Lindl.? Reichb. f. in Flora, 1865, 189.

Lower Guinea. Angola: Golungo Alto, *Welwitsch*, 679!

A distinct little plant, known only from fruiting specimens.

49. **L. forcipata,** *Kränzl. in Engl. Jahrb.* xix. 254. Plant very small. Rootlets numerous, much longer than the very short stem. Leaves ensiform, narrowly compressed, acute, straight or slightly curved, 4 in. long, 5 lin. broad. Racemes much shorter than the leaves, few-flowered, apparently secund. Bracts triangular, acute; base more or less clasping the slender pedicel and three or four times as short as it. Flowers $\frac{1}{2}$ in. long, $2\frac{1}{2}$ lin. broad. Dorsal sepal oblong; lateral obovate; all very obtuse. Limb of the lip nearly obsolete, so that nothing remains but the large, infundibuliform spur, which is entire at the mouth, attenuate below, and contracted, then expanding into a deeply bifid or forcipate apex. Column broadly margined, nearly cucullate; anther flat; apex much produced; stipites free; gland elongate, rectangular; rostellum broad, retuse.

Upper Guinea. Cameroons: Primæval forests West of Buea, 4200 ft., *Preuss.*

Said to be one of the smallest species of the genus, much resembling a small *Oncidium iridifolium*, Lindl., in habit. I have not seen it.

50. **L. dactyloceras,** *Reichb. f. in Flora*, 1865, 190. Plant about 3 in. high. Stems short, stout, 1–$1\frac{1}{4}$ in. long, 3–4-leaved. Leaves equitant, ensiform, very fleshy, subobtuse or scarcely apiculate, $1\frac{1}{2}$ in. long. Racemes capitate; rhachis very short. Bracts ovate or ovate-oblong, subobtuse or apiculate, 1–$1\frac{1}{4}$ lin. long. Pedicels slender, 4–6 lin. long. Sepals and petals broadly oblong or suborbicular, membranous, subequal, $1\frac{1}{2}$–$1\frac{3}{4}$ lin. long. Lip with a short, broad claw, 1 lin. long; limb ovate, obtuse, crenulate, $1\frac{1}{2}$ lin. long; spur narrowly infundibuliform-oblong, slightly narrowed above the middle, $3\frac{1}{2}$–4 lin. long; apex slightly broader, subcompressed and obscurely tridenticulate. Column stout, $\frac{3}{4}$ lin. long; rostellum subulate, deflexed into the spur, longer than the column; pollinia with distinct, slender, curved stipites, 1 lin. long.

Lower Guinea. Angola: Pungo Andongo; near the large waterfall of the river Cuanza, between Quisonde and Condo, and in the Island of Calemba, *Welwitsch*, 677!

A very distinct species, much like a *Saccolabium* in the flowers, but the pollen is that of a *Listrostachys*.

51. **L. subulata,** *Reichb. f. ex Kränzl. in Engl. Jahrb.* xxii. 28 (*in note*). Stems slender, more or less curved, 3–12 in. long. Leaves terete, subulate, slender, acute, $1\frac{1}{2}$–5 in. long; sheaths transversely rugose. Bracts ovate, subobtuse, $\frac{3}{4}$ lin. long. Pedicels $1\frac{1}{2}$ lin. long. Flowers few and fasciculate or solitary, white. Sepals elliptic-oblong, subobtuse, $1\frac{1}{2}$ lin. long. Petals lanceolate-oblong, subobtuse, as long as the sepals. Lip broadly ovate, concave, subobtuse or apiculate, 2 lin. long; spur falcate-incurved, subclavate, 2 lin. long. Column very short; pollinia subsessile, separately attached to a broad gland.—*Angræcum subulatum*, Lindl. in Hook. Comp. Bot. Mag. ii. 206.

Upper Guinea. Sierra Leone: Samu, on old trees in mangrove swamps, *Scott-Elliot*, 4334! and without precise locality, *Afzelius! Loddiges!* Niger Delta: Nun

River, on mangroves, *Barter*, 20125! Brass, *Barter*, 52; Fernando Po, growing pendant 7–8 ft. long, from branches of lofty trees, *Barter!*

The Fernando Po piece has longer and more slender leaves, but agrees in other respects, and I think belongs to the same species.

52. **L. filiformis,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 158. Racemes minute, small-flowered. Bracts and flowers very minute. Sepals ovate-triangular, acute. Petals linear. Lip cochleate, unguiculate at the base and concave, dilated in front into 2 large rounded lobes; spur subulate, longer than the lip. Column stout.—Kränzl. in Engl. Jahrb. xxii. 28.

Nile Land. British East Africa: Mpororo; Kyenkesi, Nyavehasi Mountain, 6200 ft., hanging from trees like the lichen, *Usnea barbata, Stuhlmann*, 2229.

Only known to me from the original description. Said to be almost exactly like the West African *L. subulata*, Reichb. f., but twice as large. The leaves are not described.

19. MYSTACIDIUM, Lindl.; Benth. et Hook. f. Gen. Pl. iii. 584.

Sepals and petals subequal, free, spreading or subconnivent. Lip affixed to the base of the column and continuous with it, produced at the base into a short or somewhat elongate spur; side lobes small, or obsolete, at the sides of the spur; limb spreading or erect, generally entire. Column very short, broad, concave in front, without wings and footless; clinandrium truncate, entire. Anther terminal, operculate, incumbent, convex, often produced in front, scarcely 2-celled; pollinia 2, globose, sulcate, situated upon a pair of slender stipites, which are attached to separate oblong or squamiform glands. Capsule oblong or fusiform. —Epiphytic herbs. Stems leafy, short or elongated, not thickened into pseudobulbs. Leaves distichous, coriaceous or fleshy, articulated to a persistent sheath. Peduncles lateral, simple. Flowers generally small or medium-sized, racemose or solitary. Bracts usually small.

A genus of about forty species, mostly in Tropical Africa and the Mascarene Islands, with a few South African representatives and one in Ceylon. Reichenbach unites it with Lindley's genus *Aëranthus*, which is quite distinct.

Leaves flat.
- Lip at least 2 in. long . . . . . 1. *M. infundibulare.*
- Lip $\frac{3}{4}$–$1\frac{1}{4}$ in. long.
  - Spur 1 in. long . . . . . 2. *M. Astroarche.*
  - Spur 6 in. long . . . . . 3. *M. longicaudatum.*

Lip under $\frac{1}{2}$ in. long (unknown in 18).
- Racemes short, few-flowered.
  - Spur filiform.
    - Spur 8 in. long . . . . . 4. *M. Keniæ.*
    - Spur under $2\frac{1}{2}$ in. long.
      - Leaves $\frac{3}{4}$ in. broad . . . . . 5. *M. Gravenreuthii.*
      - Leaves $2\frac{1}{4}$–4 lin. broad.
        - Roots and sheaths verrucose . . . 6. *M. verrucosum.*
        - Roots and sheaths not verrucose.
          - Leaves 3–4 in. long (Western species) . 7. *M. Batesii.*
          - Leaves $1\frac{1}{2}$–$2\frac{1}{4}$ in. long (Eastern species) . 8. *M. Walleri.*
          - Leaves $\frac{1}{2}$–1 in. broad . . . . 9. *M. longifolium.*

Spur clavate or subclavate.
Leaves 6–10 lin. broad . . . . 10. *M. clavatum.*
Leaves $1\frac{1}{2}$–3 lin. broad . . . . 11. *M. Schumanni.*
Racemes longer, many-flowered.
Stems elongated and climbing.
Leaves distinctly bilobed (Angolan species).
Lip reniform-orbicular or transversely oblong. . . . . 12. *M. xanthopollinium.*
Lip cuneate . . . . . 13. *M. rutilum.*
Leaves obscurely bilobed . . . . 14. *M. productum.*
Stems short.
Spur 6 lin. long . . . . . 15. *M. curvatum.*
Spur not 3 lin. long.
Leaves 1–2 in long.
Petals ovate, acute . . . . 16. *M. Tridens.*
Petals dolabriform . . . . 17. *M. dolabriforme.*
Leaves 3–5 in. long . . . . 18. *M. pedunculatum.*
Leaves equitant . . . . . 19. *M. distichum.*

1. **M. infundibulare,** *Rolfe.* Stems elongate, climbing; internodes 1–$1\frac{1}{4}$ in. long. Leaves lanceolate-oblong, or linear-oblong, obscurely and very unequally bilobed, 5–6 in. long, $\frac{3}{4}$–1 in. broad; lobes obtuse. Peduncle 1-flowered, $2\frac{1}{4}$ in. long. Bracts broadly ovate, 3 lin. long; apex mucronate. Pedicels 2 in. long. Flowers white, fragrant. Sepals and petals elongate-linear, subacute, 2–$2\frac{1}{2}$ in. long. Lip very large; limb quadrate-obovate, very abruptly and shortly acuminate, $2\frac{1}{2}$ in. long; spur 4–5 in. long, base narrowly funnel-shaped, slender in the upper two-thirds. Column short, stout, about 3 lin. long.—*Angræcum infundibulare,* Lindl. in Journ. Linn. Soc. vi. 136.

Lower Guinea. Princes Island, *Barter,* 2005!

A very distinct and remarkable species.

2. **M. Astroarche,** *Rolfe.* Plant caulescent, 1 foot high. Leaves elliptic-oblong, obtuse, obscurely and unequally bidentate, 3–4 in. long, $\frac{3}{4}$–1 in. broad. Scapes 4–5 in. long, 1–3-flowered at the apex. Bracts ovate, obtuse, 2–3 lin. long. Sepals lanceolate, $1\frac{3}{4}$–2 in. long. Petals slightly smaller than the sepals. Lip similar to the petals but a little broader; disc with a slight median keel; spur pendulous, filiform, slightly thickened at the apex, 1 in. long. Column short and broad; anther slender, depressed; pollen globose; discs squamiform, distinct; rostellum short and broad.—*Angræcum Astroarche,* Ridl. in Bolet. Soc. Brot. v. 199, t. C, fig. a.

Lower Guinea. Island of St. Thomas: Nova Moka, 2900 ft., *Quintas,* 4!

A large-flowered species allied to the preceding.

3. **M. longicaudatum,** *Rolfe.* Stems elongated, erect and climbing. Leaves linear-oblong, obliquely and obtusely bilobed, 4–$4\frac{1}{2}$ in. long, 5–7 lin. broad. Scapes suberect, 4–6 in. long, 2–3-flowered, with two or three tubular sheaths below. Bracts broadly ovate, obtuse, 6–7 lin. long. Pedicels 2–$2\frac{1}{4}$ in. long. Sepals and petals triangular-lanceolate,

acuminate, 1–1¼ in. long. Lip triangular-lanceolate, acuminate, somewhat reflexed at the sides above the base, 1–1¼ in. long; spur filiform, elongated, 6–7 in. long. Column stout, 3½ lin. long.

Upper Guinea. Lagos, *Millen*, 188!

A very distinct species characterised by its long slender spur.

4. **M. Keniæ,** *Rolfe.* Roots very dense, mostly simple. Stem 2-edged, elongated, about 1 ft. long. Leaves somewhat remote, equitant, narrowly lancet-shaped, acute, half as long as the internodes, 1¼–2 in. long, 1 lin. broad. Flowers solitary or in numerous few-flowered racemes, distinctly shorter than the leaves. Bracts very minute, triangular. Pedicels curved or twisted. Flowers 8 lin. long. Sepals lanceolate, acuminate. Petals very similar to, but a little narrower than the sepals. Lip very similar to the petals but a little shorter; spur filiform, four times as long as the pedicel, 6 in. long. Column very short. Capsule ¾ in. long, 4 lin. broad.—*Angrœcum Keniæ*, Kränzl. in Engl. Jahrb. xvii. 59.

Nile Land. British East Africa: Ndoro, at the foot of Mt. Kenia, *Höhnel*, 24.

Only known to me from the original description.

5. **M. Gravenreuthii,** *Rolfe.* Stems short, rooting; apex only leafy. Leaves oblong-lanceolate, 6½ in. long, ¾ in. or more broad; apex unequal, the longer side acute. Racemes slender, pendulous, longer than the leaves, few-flowered, with a few bract-like sheaths at the base. Bracts ovate, acute, one-fifth as long as the pedicels. Flowers white, 2–2¼ in. diam.; spur pale pink, 3 in. long. Sepals, petals, and lip ovate-lanceolate, very acuminate, radiating; spur filiform, very slender, nearly three times longer than the lip; apex very slightly bilobed, incurved. Column rather long; anther apiculate; rostellum trianguiar, acute, deflexed; stipites linear; pollinia ovoid, sulcate. Capsule nearly fusiform.—*Aëranthus Gravenreuthii*, Kränzl. in Engl. Jahrb. xvii. 62.

Upper Guinea. Cameroons: in the primæval forest, west of Buea, 6200 ft., *Preuss*, 891.

Only known to me from the original description.

6. **M. verrucosum,** *Rolfe.* Plant slender, with verrucose roots and sheaths. Stems branched at the base, 4–7 in. long; branches ascending, slightly zigzag. Leaves ligulate, 2–2½ in. long, 2¼–2½ lin. broad, unequal and slightly bifid at the apex. Racemes axillary, 2-flowered, longer than the leaves, very slender, perforating the leaf-sheath, bearing two sheaths at the base. Bracts two, broadly ovate, chestnut-brown, 2–2½ in. long. Pedicels slender, 6–7 lin. long. Flowers delicate in texture. Sepals long, caudate from a lanceolate base, 13½ lin. long. Petals ovate, subhastate at the base, produced into filiform tails, 11 lin. long, 1⅓ lin. broad. Lip orbicular-ovate, 6 lin. long, 4 lin. broad; apex rather thick, abruptly acute or acuminate; spur straight, continuous with the lip, 2 in. long. Column short,

thick, 1 lin. long, 2-winged above; wings forming a hood over the stigma.—*Angræcum verrucosum*, Rendle in Journ. Bot. 1895, 250.

Mozamb. Dist. British Central Africa: Nyasaland; Mt. Mlanje, *Whyte!* Zomba, 6000–7000 ft., *Kirk!*

7. **M. Batesii,** *Rolfe.* Stem stout, $\frac{3}{4}$–1 in. high. Leaves linear, obtuse, conduplicate, $3\frac{1}{2}$–4 in. long, 4–5 lin. broad. Scapes slender, $2\frac{1}{2}$–3 in. long, 1–3-flowered, with a few narrow, tubular sheaths below. Bracts tubular, obtuse, 3–5 lin. long. Pedicels 8–9 lin. long. Flowers white. Sepals ovate-oblong, obtuse, $2\frac{1}{2}$ lin. long. Lip ovate, obtuse, convex and somewhat carinate near the base, $2\frac{1}{2}$ lin. long; spur elongated, filiform, $2\frac{1}{4}$ in. long. Column stout, 2 lin. long. Capsules fusiform-oblong, pedicelled, 1 in. long.

Upper Guinea. Cameroons: Efulen, *Bates*, 382!

8. **M. Walleri,** *Rolfe.* Stem elongated. Leaves linear-oblong, shortly and obtusely bilobed, coriaceous, $1\frac{1}{2}$–$2\frac{1}{4}$ in. long, 3–$3\frac{1}{2}$ lin. broad. Racemes 1–2-flowered, $\frac{1}{2}$–1 in. long, with two or three ovate-oblong, obtuse, carinate, nerved sheaths below. Bracts lanceolate-oblong, subobtuse, sheathing or tubular below, 4–5 lin. long. Pedicels slender, 8–10 lin. long. Sepals and petals oblong, subacute, about 3 lin. long. Lip similar to the sepals and petals; spur slender, curved, 5–6 lin. long. Column stout, $1\frac{1}{2}$ lin. long.

Mozamb. Dist. Portuguese East Africa: Moramballa Mountain, at the summit, 3000 ft., *Waller!*

The flowers are not in good condition.

9. **M. longifolium,** *Kränzl. in Engl. Jahrb.* xvii. 57. Stems short, $\frac{3}{4}$–$1\frac{1}{4}$ in. long, with imbricate bract-like sheaths, and rather flat, branched roots, 3- or more leaved. Leaves linear, rigid, very narrow, obtuse, $4\frac{3}{4}$ in. long, $\frac{1}{2}$–1 lin. broad. Racemes nearly basal, bent, 3–4-flowered. Bracts membranous, ochreate, obtuse, much shorter than the pedicels. Pedicels 4–5 lin. long. Flowers yellow, 4–5 lin. long. Sepals and petals linear-oblong, acute. Lip similar to the petals but shorter; spur filiform, semicircularly recurved, $1\frac{1}{4}$ in. long. Column very short.

Nile Land. British East Africa: Ndoro, at the foot of Mt. Kenia, *Höhnel*, 31.

Only known to me from the original description, but remarkable for its very narrow leaves.

10. **M. clavatum,** *Rolfe.* Stems short or somewhat elongate, 1 lin. thick, with many slender roots; internodes $\frac{3}{4}$ in. long. Leaves oblong or linear-oblong, obliquely and obtusely bidentate, 3 in. long, 6–10 lin. broad. Racemes short, axillary, $\frac{1}{2}$–$\frac{3}{4}$ in. long, 1- or few-flowered. Bracts ochreate, truncate, 1–$1\frac{1}{4}$ lin. long. Flowers very small. Pedicels 5 lin. long. Dorsal sepal ovate-lanceolate, subacute, 4 lin. long; lateral lanceolate, subacute, $3\frac{3}{4}$ lin. long. Petals lanceolate, subacute, $3\frac{1}{2}$ lin. long. Lip ascending, broadly ovate, concave, acute or acuminate,

keeled in the upper half, 3–3½ lin. long; spur narrow at the base, suddenly clavate or fusiform-clavate above the middle, 5½–7 lin. long. Column very stout, 1 lin. long; pollinia with short, slender stipites, and distinct, oblong glands.—*Listrostachys clavata*, Rendle in Journ. Bot. 1895, 251. *Angræcum monodon*, Lindl. in Journ. Linn. Soc. vi. 135 (not elsewhere).

Upper Guinea. Sierra Leone: near Bafodeya, *Scott-Elliot*, 5555! Lagos: Forest between Otta and Abeokuta, *Barter*, 3352! Lower Niger: Onitsa, *Barter*, 477!

11. **M. Schumanni,** *Rolfe.* Plant dwarf, branched at the base, 4 in. high. Roots numerous. Stem curved, ascending. Leaves dense, linear, unequal at the apex, obtuse, recurved, ¾ in. long, 1½–2 lin. broad. Inflorescence 2-flowered, a third as long as the leaves. Bracts pellucid, ovate, obtuse. Flowers smaller than in *M. distichum*, Benth. Sepals and petals oboval, obtuse. Lip cochleate, entire, obtuse. Spur obtuse, subclavate, slightly shorter than the lip and much shorter than the pedicels. Column short, stout; anther flat; rostellum trilobed, side lobes inflexed on the sides of the stigma, front lobe much shorter, deflexed. Pollinia globose; glands very large, affixed to the arms of the rostellum, emarginate in front.—*Angræcum Schumanni*, Kränzl. in Mitth. Deutsch. Schutzgeb. ii. (1889) 159.

Upper Guinea. Cameroons, *Braun.*

A miniature species only known to me from the original description.

12. **M. xanthopollinium,** *Durand & Schinz, Conspect. Fl. Afr.* v. 55. Plant caulescent. Stem stout, climbing, sometimes branched, with long, aerial roots. Leaves linear or oblong-linear, 2¼–3 in. long, 2½–3½ lin. broad: apex very unequally and obtusely bilobed. Racemes axillary, slender, 3–4 in. long, many-flowered. Bracts ochreate, ¾–1 lin. long; apex broadly triangular, apiculate. Pedicels minutely punctulate, 1¼–1½ lin. long. Sepals oblong or ovate-oblong, obtuse, punctulate outside, 1½ lin. long. Petals subequal, broader than the sepals. Lip broadly flabellate or transversely oblong, repand or obscurely trilobed in front, 2–2¼ lin. long; spur cylindrical, slightly curved, 3 lin. long. Column stout, ¾ lin. long; rostellum beak-like, linear, nearly as long as the column; pollen with distinct stipites and glands, on either side of the rostellum, yellow.—*Aëranthus xanthopollinius*, Reichb. f. in Flora, 1865, 190. *Aëranthus erythropollinius*, Reichb. f., l. c. 190. *Mystacidium erythropollinium*, Durand & Schinz, Conspect. Fl. Afr. v. 52.

Lower Guinea. Angola: Pungo Andongo; in primæval woods of Mata de Pungo and Cabondo, *Welwitsch*, 678! Golungo Alto; in woods along the Cuango Rivulet, *Welwitsch*, 665!

Reichenbach originally divided this into two species, but I fail to find a single distinguishing character.

13. **M. rutilum,** *Durand & Schinz, Conspect. Fl. Afr.* v. 54. Leaves oblong-ligulate; apex unequally and obtusely bilobed. Racemes elongate, dense-flowered. Bracts retuse, very short. Flowers reddish; petals and lip yellowish-white. Sepals oblong, obtuse. Petals slightly

broader than the sepals. Lip cuneate; apex dilated, slightly trilobed, or entire and subacute; spur filiform, falcate, longer than the pedicels. —*Aëranthus rutilus*, Reichb. f. in Flora, 1885, 382. *Listrostachys rutila*, Ridl. in Bolet. Soc. Brot. v. 200.

Lower Guinea. Island of St. Thomas: Nova Moka; Santa Maria, 2600–4400 ft., *Moller*. Angola, *Monteiro*.

Only known to me from the original description.

14. **M. productum,** *Kränzl. in Engl. Jahrb.* xxii. 30. Stems elongate, many-leaved, internodes about $\frac{3}{4}$ in. long. Leaves distichous, oblong; apex obscurely bilobed, acute. Racemes mostly solitary, nearly opposite the leaves, very straight, more than twice as long as the leaves, many-flowered, with numerous sheaths below the flowers. Bracts small, ochreate, retuse. Flowers $1\frac{1}{2}$ lin. long, pale brown. Sepals oblong, obtuse. Petals equal, linear, acute. Lip dilated from the base, flabellate-subquadrate, obscurely bilobed, retuse; disc with a minute, acute tooth at the base; spur incurved, fusiform, obtuse, a little longer than the limb and pedicel. Column stout; anther produced in front.

Upper Guinea. Cameroons: between Victoria and Bimbia, on high trees, *Preuss*, 1227.

Only known to me from the original description, but apparently allied to the preceding.

15. **M. curvatum,** *Rolfe.* Leaf obovate-oblong, obliquely and obscurely bilobed, $2\frac{3}{4}$ in. long, 12–13 lin. broad; lobes subacute. Raceme arching, 4–$4\frac{1}{2}$ in. long, lax, many-flowered. Bracts very broadly ovate, subobtuse, $\frac{1}{3}$–$\frac{1}{2}$ lin. long. Pedicels 2–$2\frac{1}{2}$ lin. long. Flowers light yellowish-green. Sepals oblong or elliptic-oblong, obtuse, 2–$2\frac{1}{4}$ lin. long. Petals ovate-oblong, obtuse, slightly shorter than the sepals. Lip ovate-suborbicular, obtuse, $1\frac{1}{2}$ lin. long; disc thickened round the mouth of the spur; spur slender, curved, 5–6 lin. long. Column stout, $\frac{3}{4}$ lin. long. Pollinia with slender stipites and separate, ovate-oblong glands.

Upper Guinea. Ashanti: cultivated specimen!

Flowered in the collection of Sir Trevor Lawrence, Bart., in 1892.

16. **M. Tridens,** *Rolfe.* Plant very dwarf, almost stemless. Leaves linear-lanceolate, 1–2 in. long; apex unequally and minutely bilobed; lobes obtuse. Scapes suberect, very slender, 2–3 in. long. Racemes 5–8-flowered. Bracts triangular, subobtuse, scarcely $\frac{1}{2}$ lin. long. Pedicels $2\frac{1}{2}$–3 lin. long. Dorsal sepal ovate, subacute, recurved, $\frac{3}{4}$ lin. long; lateral subspathulate-linear, subobtuse, $1\frac{1}{2}$ lin. long. Petals ovate, acuminate, recurved, $\frac{3}{4}$ lin. long. Lip tripartite from a short, broad base, with subulate, diverging lobes, $1\frac{1}{2}$ lin. long; spur 1 lin. long, inflated at the apex. Column very short; pollinia with distinct, clavate stipites and oblong, downy glands, both somewhat hairy.—*Listrostachys Tridens*, Reichb. f. in Flora, 1865, 190. *Angræcum Tridens*, Lindl. in Journ. Linn. Soc. vi. 135.

Upper Guinea. Fernando Po, 4000, ft., *Mann*, 646!

17. **M. dolabriforme,** *Rolfe in Bolet. Soc. Brot.* ix. 141. Plant about 3 in. high. Leaves linear-oblong, unequally bidentate, 1½ in. long, 3–6 lin. broad. Racemes suberect, slender, 2½–5 in. long, many-flowered. Bracts small, ochreate at the base; apex shortly triangular. Pedicels slender, 3½ lin. long. Dorsal sepal ovate-lanceolate, obtuse, 1 lin. long; lateral spathulate-linear, subfalcate, obtuse, 2½ lin. long. Petals somewhat axe-shaped, rounded and oblique below the apex, long acuminate. Lip 3 lin. long; base narrow; apex tricuspidate; lobes linear-subulate, acute; spur clavate, 2 lin. long. Column very short; rostellum apiculate; pollinia with 2 slender stipites and distinct glands.

Lower Guinea. Island of St. Thomas: cultivated specimens, *Henriques !*

Originally flowered at the Coimbra Botanic Gardens in 1889. The axe-shaped petals are peculiar.

18. **M. pedunculatum,** *Rolfe.* Stem stout, 1–2 in. long. Leaves ensiform, obliquely subobtuse or obscurely bilobed, sometimes slightly falcate, 3–7 in. long, 3–6 lin. broad. Peduncles slender, 3–6 in. long, with two or three small, narrow, tubular sheaths, several- or many-flowered at the apex. Bracts broadly ovate, somewhat obtuse, aggregated, ⅓–½ lin. long. Capsules elliptic-oblong, pedicellate, 4 lin. long.

Mozamb. Dist. Portuguese East Africa: Makua-land; Namuli Mountains, *Last !* British Central Africa: Mt. Chiradzulu, Manganga Hills, *Miller,* 3! Mt. Mlanje, 4000 ft., *McClounie,* 29 !

A very distinct species, only known from fruiting specimens.

19. **M. distichum,** *Benth. in Journ. Linn. Soc.* xviii. 337. Stems tufted, more or less curved, 3–9 in. long. Leaves equitant, distichous, approximate, broadly elliptic-oblong, obtuse, falcately recurved, 4–9 lin. long. Flowers solitary, axillary, on very short peduncles, about 1½ lin. diam. Bracts ovate, obtuse, 1 lin. long. Pedicels 2½ lin. long. Sepals ovate-oblong, obtuse, 1–1½ lin. long. Petals oblong, obtuse, slightly smaller than the sepals. Lip cucullate, broadly ovate or ovate-oblong, trilobed, 1 lin. long; side lobes broadly rounded; front lobe triangular, subacute. Column very short; pollinia with short stipites and distinct oblong glands.—Pfitz. in Engl. et Prantl, Nat. Pflanzenf. ii. Abth. 6, 216; Durand & Schinz, Conspect. Fl. Afr. v. 52. *Limodorum imbricatum,* Sw. in Schrad. Neues Journ. i. 87; Pers. Syn. Pl. ii. 521. *Angræcum distichum,* Lindl. in Bot. Reg. 1835, t. 1781; Bot. Mag. t. 4145. *Aëranthus distichus,* Reichb. f., in Walp. Ann. vi. 901.

Upper Guinea. Sierra Leone: Sugar-Loaf Mountain, *Barter !* near Wilberforce, 250 ft., *Johnston,* 100! between Tawia and Herimankuna, *Scott-Elliot,* 4492! and without precise locality, *Afzelius ! Loddiges ! Smeathman ! Sturmont !* Lagos, *Millen,* 27! Lower Niger: Onitsa, *Barter,* 1362! Niger Delta: Brass, *Barter,* 1854! Nun River, *Mann,* 523! Cameroons, *Preuss,* 434.

Lower Guinea. Gaboon: Munda; Sibange Farm, *Soyaux,* 118! Princes Island, *Barter,* 1992! St. Thomas, at Angolares, 650 ft., *Quintas,* 11!

20. **VANILLA,** Sw.; Benth. et Hook. f. Gen. Pl. iii. 590.

Sepals subequal, free, more or less spreading. Petals similar to the sepals or nearly so. Lip more or less adnate by its margins to the column, forming a short or long tube, broadening upwards; limb broad, entire or trilobed, more or less reflexed, its face smooth, puberulous or variously appendiculate; disc usually bearing a retrorse crest of hairs or fringed scale-like appendages. Column elongated and curved, footless, auriculate on the sides of the stigma. Anther affixed to the margin of the clinandrium, incumbent, subglobose, operculate; cells distinct; pollinia granulose. Stigma transverse, situated under the rostellum; rostellum broad, membranous, with hinge-like base. Capsule linear or oblong, fleshy, tardily dehiscent; seeds subglobose, black and shining.—Tall, climbing, branched herbs, leafy or the leaves reduced to sheaths. Stems fleshy, bearing adventitious roots at the nodes. Leaves coriaceous or fleshy, sessile or shortly petiolate. Racemes usually axillary, subsessile or pedunculate. Flowers large and fugacious. Bracts ovate or oblong, often small.—Rolfe in Journ. Linn. Soc. xxxii. 439.

A genus of about 50 species, widely diffused through the forest region of the tropics, most numerous in Tropical America, with eleven Asiatic representatives, and three Mascarene ones, beside the following nine which come within our limits.

Stems leafy.
- Tube formed by the union of the lip and column about as broad as long.
  - Leaves broadly lanceolate or elliptic-lanceolate.
    - Column with upper third free from the lip.
      - Leaves 2–5 in. long; front lobe of lip triangular . . . . . 1. *V. africana.*
      - Leaves 6–7 in. long; front lobe of lip broadly oblong . . . . . 2. *V. acuminata.*
    - Column with upper two-thirds free from the lip . 3. *V. cucullata.*
  - Leaves oblong or elliptic-oblong.
    - Front lobe of lip narrow in front and acute; inflorescence often branched . . . 4. *V. ramosa.*
    - Front lobe of lip subobtuse; inflorescence unbranched.
      - Sepals 10–11 lin. long, two-thirds as long as the pedicels . . . . . 5. *V. crenulata.*
      - Sepals 7–8 lin. long, half as long as the pedicels . . . . . 6. *V. ovalifolia.*
- Tube formed by the union of the lip and column much longer than broad.
  - Leaves oblong . . . . . 7. *V. imperialis.*
  - Leaves broadly elliptic-ovate or suborbicular . 8. *V. grandifolia.*

Stems leafless . . . . . 9. *V. Roscheri.*

1. **V. africana,** *Lindl. in Journ. Linn. Soc.* vi. 137. Stem slender, high climbing. Leaves petiolate, oblong-lanceolate, acuminate, 2–5 in. long, $\frac{1}{2}$–$1\frac{1}{4}$ in. broad. Raceme $\frac{3}{4}$ in. long. Bracts ovate, acute, $1\frac{1}{2}$ lin. long. Sepals and petals not seen. Lip trilobed, 8 lin. long; side lobes roundish-oblong, obtuse, denticulate; front lobe deltoid-ovate, acute; disc with a retrorse hairy crest in the centre, extending as a

papillose keel to the base of the lip. Column ½ lin. long.—Kränzl. in Mittheil. Deutsch. Schutzg. ii. (1889) 161; Rolfe in Journ. Linn. Soc. xxxii. 455.

Upper Guinea. Without locality, cultivated specimens, *Loddiges!* Niger Delta: Brass, *Barter*, 47! Great Batanga, *Braun*, 17 (ex Kränzlin).

Lower Guinea. Gaboon: Mount John, Kongui River, *Mann*, 1881!

Originally described from a specimen which flowered with Messrs. Loddiges. Unfortunately the sepals and petals are not described by Lindley, nor are they present on any of the specimens, though Lindley has carefully preserved and drawn the other parts of the flower.

2. **V. acuminata,** *Rolfe in Journ. Linn. Soc.* xxxii. 456. Stem rather slender. Leaves petiolate or oblong-lanceolate, acuminate, 6–7 in. long, 1–1¼ in. broad; petioles ¾ lin. long. Racemes 1 in. long. Bracts ovate-oblong, subobtuse, 1¼–4 lin. long. Sepals 10–12 lin. long; dorsal lanceolate, acute, 3 lin. broad; lateral lanceolate-oblong, acute, 4 lin. broad. Petals falcate-lanceolate, acute, 9–10 lin. long, 2½ lin. broad. Lip deeply trilobed, 7–8 lin. long; side lobes roundish-oblong, obtuse; front lobe oblong, obtuse or apiculate; disc with a small central crest composed of a few retrorse scales. Column clavate, 6–7 lin. long.

Lower Guinea. Gaboon: Province of Munda, frequent in woods, but seldom flowers, *Soyaux*, 134!

Larger altogether than the preceding, with the lip differently shaped, and the crest reduced to a few scaly appendages.

3. **V. cucullata,** *Kränzl. in Mittheil. Deutsch. Schutzg.* ii. (1889), 161. Leaves oblong, acuminate, obliquely cordate at the base, shortly petiolate, 4–6 in. long, 1¼–2¼ in. broad. Rhachis of raceme rather stout, rarely branched at the base. Bracts squamiform, triangular. Flowers 1 in. long. Lateral sepals ovate, slightly oblique; dorsal oblong, rather shorter than the lateral. Petals very similar to the sepals. Lip ovate, nearly triangular, acute; disc with two linear lamellæ, one behind the other, hyaline and fimbriate at the apex, reflexed and appressed to the limb. Column curved, the basal third united to the lip.—Rolfe in Journ. Linn. Soc. xxxii. 456.

Upper Guinea. South Cameroons, *Braun*, 4.

Only known to me from the original description, but apparently allied to the preceding. The lip is less united to the column, and apparently different in shape.

4. **V. ramosa,** *Rolfe in Journ. Linn. Soc.* xxxii. 457. Stem rather slender. Leaves petiolate, oblong or elliptic-oblong, shortly acuminate and subobtuse, 4–6 in. long. 1–2¼ in. broad; petioles ½–¾ in. long. Racemes 1½–2 in. long, often somewhat branched at the base. Bracts ovate, subobtuse, 1–2 lin. long. Sepals and petals oblong-lanceolate, subacute, subequal, 10–12 lin. long. Lip deeply trilobed, 7–8 lin. long; side lobes broader than long; front lobe oblong, subacute, margin crenulate, reflexed, plicate; crest composed of several scales. Column

clavate, 7–8 lin. long. Capsule not seen.—*Vanilla sp.*, Lindl. in Journ. Linn. Soc. vi. 137.

Upper Guinea. Western Lagos, *Rowland !* Niger Territory, Angiama, *Barter*, 20134!

5. **V. crenulata,** *Rolfe in Journ. Linn. Soc.* xxxii. 477. Stem rather slender; internodes 2–3 in. long. Leaves petiolate, elliptic-oblong, abruptly acuminate, 2–5 in. long, 1½–2½ in. broad; petioles 3–6 lin. long. Racemes 1–1½ in. long, not branched. Bracts broadly triangular-ovate, subobtuse, concave, 1–3 lin. long. Flowers purple and white. Sepals 11–13 lin. long, 4–4½ lin. broad; dorsal lanceolate-oblong, subobtuse, concave; lateral elliptic-oblong, obtuse, carinate. Petals falcate-oblong, subobtuse, 11 lin. long, 3½ lin. broad. Lip trilobed, 6 lin. long; side lobes oblong, adnate to the sides of the column, free margin reflexed and crenulate; front lobe triangular-ovate, subobtuse, sides conduplicately reflexed and crenulate; crest composed of few scales. Column incurved, 9–10 lin. long.

Upper Guinea. Sierra Leone: between Bumban and Lokko, *Scott-Elliot*, 5733! Ashanti: near Assin-yan-Coomassie, *Cummins*, 4!

Distinguished from the preceding by the broader crenulate lip and other characters.

6. **V. ovalifolia,** *Rolfe in Journ. Linn. Soc.* xxxii. 457. Stem slender. Leaves petiolate, broadly elliptical, abruptly narrowed to the subobtuse apex, 3–3½ in. long, 1¾–2 in. broad; petioles 4–6 lin. long. Racemes 1½–2 in. long, not branched at the base; rhachis slightly compressed. Bracts triangular-ovate, subacute, 1 lin. long. Pedicels 1½–1¾ in. long. Sepals and petals lanceolate-oblong, subobtuse, rather unequal, 8–9 lin. long. Lip deeply trilobed, 7–8 lin. long; side lobes roundish-oblong, obtuse; front lobe oblong, obtuse, crenulate; middle nerve thickened; crest composed of many broad scales. Column clavate, 6–7 lin. long.

Upper Guinea. Old Calabar, *Thomson*, 132!

7. **V. imperialis,** *Kränzl. in Notizbl. Bot. Gart. Berlin*, 1896, 155, *t.* 1. Stem very thick, 14 lin. broad. Upper leaves oblong, apiculate, 6 in. long, 3½ in. broad. Racemes short and compact. Bracts broadly ovate, cymbiform, acute, 10–12 lin. long. Pedicels stout, 3–4 in. long. Sepals and petals lanceolate, acute, 3–3¼ in. long, 8–9 lin. broad, pale yellow. Lip subentire, convolute, 3–3¼ in. long; lower part of the tube narrow; side lobes obsolete, broadly expanded in front, broader than long, white below, deep purple above, with white spots; margin crenulate, undulate; crest central, composed of numerous retrorse hairs, with a broad row of similar hairs on the front lobe of the lip, and another row of much smaller ones extending to the base of the lip. Column stout, 1½ in. long.—Rolfe in Journ. Linn. Soc. xxxii. 478.

Upper Guinea. Cameroons: Yaunde, near Ungomessam, 2600–2900 ft., *Zenker* and *Staudt*, 626.

Most closely allied to the following species.

8. **V. grandifolia,** *Lindl. in Journ. Linn. Soc.* vi. 138. Leaves petiolate, broadly elliptic-ovate or suborbicular, suddenly narrowed near the obtuse apex, 6–8 in. long, 4–5 in. broad. Racemes 4 in. long. Bracts ovate-oblong, obtuse, 6 lin. long. Pedicels $2\frac{1}{2}$ in. long. Sepals and petals oblong-lanceolate, obtuse, $2\frac{1}{4}$ in. long. Lip subentire? undulate, 2 in. long; nerves of the disc thickened above; crest composed of numerous capillary appendages. Column $1\frac{1}{4}$ in. long; rostellum 5 lin. long. Capsule elongate, rather stout, 6–10 in. long.—Rolfe in Journ. Linn. Soc. xxxii. 458.

Lower Guinea. Princes Island, *Barter*, 1981! *Monteiro! Henriques!*

A very distinct species. The lip of the only flower seen is somewhat broken in front, so that its exact shape cannot be made out.

9. **V. Roscheri,** *Reichb. f. in Linnæa*, xli. 65. Stem stout, leafless. Racemes peduncled, many-flowered. Pedicels $1\frac{1}{2}$ in. long. Bracts triangular, acute, very small. Sepals lanceolate-oblong, subobtuse, $3–3\frac{1}{4}$ in. long. Petals elliptic-oblong, $3–3\frac{1}{4}$ in. long, rather broader than the sepals. Lip entire, broad, obtuse or apiculate, undulate, $2\frac{1}{2}–2\frac{3}{4}$ in. long; disc with two puberulous lines extending from the middle to the base. Column clavate, 1 in. long. Capsule elongate-linear, 6–7 in. long.—Rolfe, in Journ. Linn. Soc. xxxii. 475.

Mozamb Dist. Zanzibar, *Roscher, Kirk!*

The following may also belong to this species: Mombasa, *Wakefield* (a drawing)! between Kilimanjaro and the coast, frequent among trees on the margins of maritime creeks, *Johnston!* Giryama and Shimba Mts., near Mombasa, *Taylor!* and Samburu, *Scott-Elliot!* but the materials are hardly sufficient for certain determination.

Remarkable for its leafless habit, and large white flowers.

V. sp., *Kränzl. in Mittheil. Deutsch. Schutzg.* ii. (1889), 161, from Batanga, near Kribi, is a barren specimen which I have not seen, but may belong to one of the preceding species.

21. CORYMBIS, Thou.; Benth. et Hook. f. Gen. Pl. iii. 591.

Sepals and petals narrow and approximate below, somewhat dilated and spreading above. Lip erect from the base, linear, channelled, dilated at the apex into a short recurved limb. Column elongated, erect, terete, clavate at the apex, terminating in two erect lobes or auricles; clinandrium short. Anther erect, narrow, acuminate, about as long as the column; cells contiguous; pollinia granular, affixed to a subulate stipes, with a peltate gland, descending behind the rostellum. Stigma broad, often thickened at the lower margin; rostellum erect, acuminate, bifid after the removal of the pollinia. Capsule linear, subterete, crowned with the column and the remains of the persistent perianth.—Tall, erect, terrestrial herbs, with leafy, sometimes branched stems, and numerous fibrous roots. Leaves large, elliptic-lanceolate, acute, plicate-veined, sessile or petiolate, enlarged at the base into an amplexicaul sheath. Flowers large or medium-sized, loosely arranged in short, subcorymbose, axillary or terminal panicles or racemes. Bracts small, ovate.

A genus of about 15 species, widely dispersed through the tropics.

Western species	1. *C. Welwitschii.*
Eastern species	2. *C. corymbosa.*

1. **C. Welwitschii,** *Reichb. f. in Flora*, 1865, 183. Stems 3–6 ft. high. Leaves elliptic-lanceolate or broadly elliptical, acuminate, 7–12 in. long, $1\frac{1}{2}$–$3\frac{1}{4}$ in. broad. Panicles axillary and terminal, shortly pedunculate. Bracts ovate-lanceolate, acuminate, 5–9 lin. long. Flowers greenish-white. Sepals and petals narrowly elongate-linear, narrowly lanceolate near the apex, $2\frac{1}{2}$ in. long. Lip similar to the sepals, but the apical part of the limb is ovate and about four times as broad. Column $1\frac{3}{4}$ in. long. Capsule linear-oblong, 1 in. long.—Rolfe in Bolet. Soc. Brot. ix. 141; Durand & Schinz, Conspect. Fl. Afr. v. 56. *Corymbis disticha*, Lindl. Fol. Orch. Corymbis, 1, in part; Journ. Linn. Soc. vi. 138, in part. *Corymbis corymbosa*, Durand & Schinz, l.c. 56, in part. *Corymborchis Welwitschii*, Kuntze, Rev. Gen. Pl. 658.

Upper Guinea. Sierra Leone, cultivated specimen, *Gower !* Fernando Po, *Barter*, 1478! *Mann*, 430!

Lower Guinea. St. Thomas: 1000 ft., *Quintas*, 27! *Don.* Angola: Golungo Alto; Cungulungula, in dense shade, *Welwitsch*, 667! Cazengo; Mt. Muxaula, *Welwitsch*, 668!

This species was confused by Lindley with others from India, Malaya, Polynesia, and Madagascar.

2. **C. corymbosa,** *Thou. Orch. Iles Afr.* tt. 37–38. Stem 2–3 ft. high. Leaves elliptic-lanceolate, acuminate, 7–9 in. long, $1\frac{1}{2}$–$2\frac{1}{2}$ in. broad. Cymes or panicles axillary, shortly pedunculate. Bracts ovate-lanceolate, acuminate, 3–5 lin. long. Flowers large, white. Capsule linear-oblong, 9–10 lin. long; column persistent, 2 in. long.—Ridl. in Journ. Linn. Soc. xxi. 498; Durand & Schinz, Conspect. Fl. Afr. v. 55, in part; Kränzl. in Engl. Pfl. Ost.-Afr. C. 154. *Corymbis disticha*, Lindl. Fol. Orch. Corymbis, 1, in part. *Corymbis Thouarsii*, Reichb. f. in Bot. Zeit. 1849, 868. *Corymborchis Thouarsii*, Blume, Coll. Orch. Archip. Ind. 126, t. 44, fig. 1.

Mozamb. Dist. German East Africa: Usagara; Kisara, in forests, *Holst*, 2346!

Also found in Madagascar, if the African plant is identical, as determined by Kränzlin. The Kew specimen is without flowers.

22. ZEUXINE, Lindl.; Benth. et Hook. f. Gen. Pl. iii. 599.

Sepals subequal; dorsal erect, concave; lateral spreading, free. Petals narrow, often cohering with the dorsal sepal into a galea. Lip very shortly adnate to the base of the column, erect, concave or subsaccate at the base, but not protruded beyond the lateral sepals; with or without a pair of calli inside, more or less contracted in the middle, dilated at the apex into a small entire, or larger bilobed, spreading limb. Column very short; clinandrium short, continuous with the margin of the rostellum. Anther erect or inclined in front, oblong, shortly apiculate; cells contiguous with the outer valves, broad; pollinia

granular, affixed to a linear or cuneate stipes with a broad, rounded gland, descending behind the rostellum. Stigmas 2, lateral; rostellum erect, short and broad or minute. Capsule small, erect, ovoid or subglobose.—Slender or dwarf terrestrial herbs, with short creeping rhizomes, and ascending or erect, simple stems. Leaves sessile on the broad sheath, and linear, or petiolate with an ovate or lanceolate limb, often membranous. Flowers small, numerous, arranged in dense or slender spikes. Bracts membranous, mostly shorter than the flowers.

A genus of about 20 species, mostly Indian and Malayan, with four Tropical and one South African representatives.

Leaves linear	1. *Z. africana.*
Leaves ovate or elliptical.	
Flowers $1\frac{1}{4}$ lin. long	2. *Z. elongata.*
Flowers 3–$3\frac{1}{2}$ lin. long.	
Lip trifid in front	3. *Z. tetraptera.*
Lip divaricately bilobed	4. *Z. Batesii.*

1. **Z. africana,** *Reichb. f. in Flora*, 1867, 103. Plant very slender, about 9 in. high, with a few sheaths at the base. Leaves about 8, linear, acute, short. Racemes few-flowered, cylindrical, congested. Bracts linear, acuminate, longer than the flowers. Flowers greenish-white. Dorsal sepal cucullate; lateral ligulate, subacute. Petals oblong, acute, hyaline, forming a galea with the dorsal sepal. Lip unguiculate; base hastate-triangular; apex linear-ligulate, obtuse. Column with a pair of ligulate, retuse arms at the base.

Lower Guinea. Angola: Golungo Alto; Cuango Rivulet, among grasses, very rare, *Welwitsch*, 669!

2. **Z. elongata,** *Rolfe in Bolet. Soc. Brot.* ix. 142. Plant 1–$1\frac{1}{4}$ ft. high; stem creeping at the base. Leaves several, ovate-oblong, subobtuse, petiolate; limb $1\frac{1}{2}$–2 in. long, 8–10 lin. broad; petiole $\frac{1}{2}$ in. long, with a membranous sheath at the base. Scapes 8–10 in. long, puberulous; spikes 5 in. long, many-flowered. Bracts narrowly lanceolate, setaceous acuminate, 2–$2\frac{1}{2}$ lin. long. Flowers $1\frac{1}{4}$ lin. long. Dorsal sepal ovate, obtuse, 1 lin. long; lateral elliptic-oblong, obtuse, free. Petals linear, subobtuse, cohering at the base with the dorsal sepal into a hood, free at the apex. Lip as long as the sepals; base contracted into a concave, linear claw; limb reniform-ovate, entire, $\frac{3}{4}$ lin. diam.; calli 2, minute, erect, at the base of the concave claw. Column short; arms straight.

Upper Guinea. Sierra Leone: Talla district; Lomaburn, *Scott-Elliot*, 5020!
Lower Guinea. Princes Island, *Quintas*, 12!

3. **Z. tetraptera,** *Durand & Schinz, Conspect. Fl. Afr.* v. 57. Plant 1 ft. high; stem creeping at the base. Leaves shortly petiolate; limb broadly elliptical or ovate-oblong, shortly acuminate, $1\frac{1}{4}$–$2\frac{1}{2}$ in. long, $\frac{3}{4}$–$1\frac{1}{4}$ in. broad; petioles 2–3 lin. long. Scapes 6–7 in. long; racemes lax, hispidulous-pubescent. Bracts lanceolate, acuminate, 4–5 lin. long. Sepals lanceolate, acuminate, $3\frac{1}{2}$ lin. long. Petals linear. Lip ligulate,

channelled, trifid in front; side lobes obtriangular, slightly erose and crenulate at the sides; front lobe with a very minute apiculus. Column short. Arms of the rostellum narrowly obtriangular.—*Monochilus tetrapterus*, Reichb. f. Otia Bot. Hamb. ii. 110.

Lower Guinea. Gaboon: Sierra del Crystal, *Mann*, 1701!

The flowers are in such bad condition that I have had to rely almost entirely upon Reichenbach's description.

4. **Z. Batesii,** *Rolfe.* Plant about 1 ft. high; stem with a long creeping base. Leaves shortly petiolate, broadly elliptical or obovate-elliptical, shortly acuminate, $2\frac{1}{4}$–$2\frac{3}{4}$ in. long, 12–16 lin. broad; petioles $\frac{1}{2}$ in. long. Scapes 6–8 in. long; racemes many-flowered, pubescent. Bracts narrowly lanceolate, setaceous-acuminate, 4–6 lin. long. Pedicels 3 lin. long. Flowers white. Sepals ovate-oblong, obtuse; lateral $3\frac{1}{2}$ lin. long; dorsal rather smaller than the lateral. Petals filiform, $3\frac{1}{2}$ lin. long, cohering with the margins of the dorsal sepal. Lip unguiculate, divaricately bilobed; claw 2 lin. long, broader and very concave below; lobes obovate-oblong, very obtuse or crenulate, 2 lin. long, with a narrowed base; calli 2, linear, near the base of the lip. Column short; arms subspathulate-linear, 1–$1\frac{1}{4}$ lin. long.

Upper Guinea. Cameroons: Efulen, *Bates*, 299!
Lower Guinea. Gaboon: Como River, *Bates*, 463!

23. **CHEIROSTYLIS,** Blume; Benth. et Hook. f. Gen. Pl. iii. 600.

Sepals membranous, united to the middle into a tube, or rarely free, equal or the lateral extended into a short chin. Petals adnate to the dorsal sepal, sometimes scarcely distinguishable from it. Lip erect from the base of the column, narrow, channelled, with two calli at the base inside; apex dilated into a bilobed, often fimbriate limb. Column short, extended at the apex into two narrow erect arms or appendages, as long as the rostellum; clinandrium short, continuous at the base with the arms of the column and margin of the rostellum. Anther erect, acuminate; cells shortly separated at the base; pollinia sectile, affixed to a linear-cuneate, flat stipes with an oblong gland, descending behind the rostellum. Stigmas 2, lateral; rostellum erect, acuminate, bifid after the removal of the pollinia. Capsule obovoid or oblong.—Small terrestrial herbs, often very slender, with creeping rhizomes, and simple, ascending or erect, leafy stems. Leaves petiolate, ovate or lanceolate, membranous. Flowers small or medium-sized, shortly pedicellate, arranged in loose spikes or racemes. Bracts small.

A genus of about 12 species, mostly Indian and Malayan, with two Chinese representatives, beside the two following ones.

Sepals united into a tube. Leaves broadly ovate . .	1. *C. lepida.*
Lateral sepals free. Leaves ovate-oblong . . .	2. *C. heterosepala.*

1. **C. lepida,** *Rolfe.* Plant 6–9 in. high; stem creeping. Leaves numerous, petiolate; limb broadly ovate, shortly acuminate, $\frac{1}{2}$–1 in. long; petioles 4–7 lin. long, with a large lax sheath at the base. Scapes

4–6 in. long, pubescent; racemes congested or subcapitate, $\frac{1}{2}$–1 in. long. Bracts lanceolate, acuminate, $2\frac{1}{2}$–$3\frac{1}{2}$ lin. long. Flowers white. Sepals and petals united below into a short tube, $\frac{3}{4}$ lin. long, sparingly pilose; apex of the segments free, ovate-triangular, subobtuse, $\frac{3}{4}$ lin. long. Lip 2 lin. long, with a subsaccate claw; limb divaricately bilobed, $1\frac{1}{2}$ lin. long; lobes quadrate, crenate; claw with a pair of linear calli at the base. Column very short; arms linear-falcate, nearly as long as the column.—*Monochilus lepidus*, Reichb. f. Otia Bot. Hamb. ii. 110. *Zeuxine lepida*, Benth. ex Rolfe in Bolet. Soc. Brot. ix. 142; Durand & Schinz, Conspect. Fl. Afr. 57.

Upper Guinea. Sierra Leone: Sugar-loaf Mountain, on rocks near the top, very common, *Scott-Elliot*, 4027! Cameroon Mountains, 3000 ft., *Mann*, 2130!

Lower Guinea. Island of St. Thomas: 2900 ft., *Quintas*, 2!

This has the sepals connate into a tube and other characters of *Cheirostylis*, to which genus it must be referred.

2. **C. heterosepala,** *Reichb. f. Otia Bot. Hamb.* ii. 110. Plant 4–6 in. high; stems creeping at the base. Leaves several, petiolate, ovate or ovate-oblong, subacute, $\frac{1}{2}$–$1\frac{1}{2}$ in. long, $\frac{1}{4}$–$\frac{1}{2}$ lin. broad; petioles 5–6 lin. long, broadly sheathed at the base. Scapes 1–2 in. long, pubescent; racemes short, many-flowered. Bracts ovate-lanceolate, acuminate, 2–3 lin. long. Pedicels $2\frac{1}{2}$ lin. long. Dorsal sepal cohering with the petals into an ovate-orbicular, obtuse galea, 2 lin. long; lateral obovate, obtuse, $1\frac{1}{4}$ lin. long. Lip $1\frac{1}{2}$ lin. long, with a broad, saccate base, partly adnate to the column, and 2 diverging, orbicular lobes at the apex, 1 lin. broad. Column short; arms of the rostellum linear, obtuse, slightly curved; calli 2, linear-clavate at the base of the sac.—Rolfe in Bolet. Soc. Brot. ix. 142.

Upper Guinea. Cameroon Mountains, 3000 ft., *Mann*, 2130, partly!

Lower Guinea. Island of St. Thomas, 2800 ft., *Quintas*, 3!

The lateral sepals are free to the base, which is unusual, but it agrees with the genus in every other respect.

24. **HETÆRIA,** Blume; Benth. et Hook. f. Gen. Pl. iii. 603.

Sepals free or shortly united at the base, connivent or ultimately spreading, equal or the lateral a little broader. Petals narrow or broader at the base, often adhering to the dorsal sepal. Lip usually superior, erect from the base of the column, broadly ventricose at the base, with the margin often more or less adnate to the column, villous or with 2 calli inside; limb entire or divaricately bilobed. Column short, often with a pair of small crests or appendages beneath the stigma; clinandrium short. Anther erect behind the rostellum, or somewhat inclined in front; cells distinct; pollinia sectile, attached to a slender stipes with a small oblong gland, descending behind the rostellum. Stigmas 2, lateral; rostellum erect, linear, bifid after the removal of the pollinia. Capsule erect, ovoid or oblong.—Terrestrial herbs, with creeping rhizomes, and ascending or erect, simple, leafy stems. Leaves

petiolate, ovate or lanceolate, membranous. Flowers small, shortly pedicellate, arranged in lax racemes. Bracts small.

A genus of about 15 species, ranging from India to Australia, with a single Tropical African representative.

1. **H. Mannii,** *Benth. ex Durand & Schinz, Conspect. Fl. Afr.* v. 57. Plant about $1\frac{1}{2}$ ft. high; stem creeping at the base, with stout roots. Leaves petiolate; limb elliptical or elliptic-lanceolate, acuminate. $2\frac{1}{2}$–4 in. long, $\frac{3}{4}$–$1\frac{1}{2}$ in. broad; petioles 1–$1\frac{1}{4}$ in. long, expanded at the base into a large, ovate-oblong sheath. Scapes 6–9 in. long; racemes puberulous, many-flowered. Bracts lanceolate, very acuminate, 3–5 lin. long. Pedicels 4 lin. long, pubescent. Dorsal sepal ovate-oblong, obtuse, $1\frac{1}{2}$ lin. long; lateral broadly ovate, obtuse, $1\frac{1}{2}$ lin. long. Petals linear, obtuse, 1 lin. long. Lip superior, $1\frac{1}{2}$ lin. long, broadly saccate at the base; apex divided into 2, recurved, oblong, obtuse, slightly velvety lobes, $\frac{3}{4}$ lin. long; sac with a narrow, longitudinal keel, and a pair of small, rounded calli near the base. Column stout, somewhat gibbous in front. Stigmas lateral.—*Ramphidia Mannii,* Reichb. f. Otia Bot. Hamb. ii. 109.

Upper Guinea. Cameroon River, *Mann,* 2131!

25. **PLATYLEPIS,** A. Rich., Benth. et Hook. f. Gen. Pl. iii. 604.

Sepals subequal, narrow, free, connivent round the column; lateral united at the base into a very short chin. Petals narrow, slightly cohering with the dorsal sepal into a hood. Lip sessile at the base of the column, erect, channelled, broadly ventricose at the base, cohering with the margins of the column; limb very little dilated, shorter than the sepals. Column elongated, subterete; clinandrium oblong, erect behind the rostellum. Anther erect, acuminate, as long as the rostellum; cells distinct; pollinia sectile or granular, adhering to the lobes of the rostellum. Stigma broad, papillose; rostellum erect, bilobed, with lanceolate, acuminate lobes. Capsules oblong, shortly contracted at the apex.—Terrestrial herbs, with creeping rhizomes, and ascending leafy stems. Leaves petiolate, ovate or ovate-lanceolate, membranous. Flowers narrow, shortly pedicelled, arranged in dense spikes. Bracts ovate.

A genus of 4 species, natives of the Mascarene Islands, with the following exception.

1. **P. glandulosa,** *Reichb. f. in Linnæa,* xli. 62. Plant 1–$1\frac{1}{4}$ ft. high; stem creeping at the base. Leaves many, petiolate; limb elliptic-ovate, shortly acuminate, 2–$3\frac{1}{2}$ in. long, 1–2 in. broad; petioles $1\frac{1}{4}$–$1\frac{1}{2}$ in. long, broader and sheathing at the base. Scapes 6–10 in. long; racemes dense, many-flowered, $1\frac{1}{2}$–5 in. long. Bracts broadly ovate, concave, acute, glandular-villous, $2\frac{1}{2}$–$3\frac{1}{2}$ lin. long. Flowers subglabrous, brownish or greenish-yellow. Pedicels 2 lin. long. Dorsal sepal erect, ovate-oblong, subobtuse or apiculate, 3–$3\frac{1}{2}$ lin. long; lateral oblong, apiculate, reflexed, 3–$3\frac{1}{2}$ lin. long. Petals subspathulate, narrower than the dorsal sepal, and united with it into a hood. Lip

2½–3 lin. long, with a bigibbous, saccate base, and an oblong, cucullate limb, adnate to the column for ⅔ its length, acute and recurved at the apex; calli 2, orbicular, in the basal sac of the lip. Column 2½–3 lin. long, clavate.—Bolus in Journ. Linn. Soc. xxv. 187; Rolfe in Bolet. Soc. Brot. ix. 142; Bolus Ic. Orch. Aust.-Afr. i. t. 11. *Notiophrys glandulosa*, Lindl. in Journ. Linn. Soc. vi. 138. *P. angolensis*, Durand & Schinz, Conspect. Fl. Afr. v. 58. *Diplogastra angolensis*, Welw. ex Reichb. f. in Flora, 1865, 183.

Upper Guinea. Fernando Po, 2000 ft., *Mann*, 1481!
Lower Guinea. Princes Island, *Barter*, 1952! *Quintas*, 13! Angola: Golungo Alto; River Delamboa, among palms, *Welwitsch*, 672!

Also found in Natal, if the Southern plant is really identical, as is generally supposed.

26. **MANNIELLA,** Reichb. f.; Benth. et Hook. f. Gen. Pl. iii. 605.

Sepals and petals united nearly to the apex into a cylindrical tube, broader and somewhat galeate at the free apex. Lip with a slender, partially adnate claw, papillose above; limb broad, concave, not longer than the sepals; margin extended on either side of the base into a linear-clavate appendage, parallel to the claw. Column elongated, adnate to the perianth-tube, free for a short distance above, with a pair of broad, serrulate, erect, terminal lobes or wings. Anther subsessile between the column wings, broad, concave, erect or somewhat incumbent; cells distinct; pollinia loosely granular. Stigma anticous; rostellum short, broad, emarginate. Capsule oblong, erect.—A rather tall, terrestrial plant, with a short, simple stem, and stout, fleshy roots. Leaves radical, long petiolate, ovate, membranous. Flowers small, arranged in a slender spike. Bracts small and narrow.

A remarkable West Tropical African monotype.

1. **M. Gustavi,** *Reichb. f. Otia Bot. Hamb.* ii. 109. Plant 2–2¼ ft. high. Leaves 4–5, radical, long petiolate, tufted; limb broadly ovate, shortly acuminate, 2–4¾ in. long, 1–2½ in. broad; petioles 2–6 in. long, sheathing below. Scapes 2–2¼ ft. long; racemes elongate, 6–12 in. long, many-flowered. Bracts ovate-lanceolate, acuminate, 3–5 lin. long. Pedicels 3–4 lin. long. Perianth-tube slender, 2 lin. long; limb of the dorsal sepal ovate-oblong, obtuse, 1¼ lin. long; lateral ovate, obtuse, recurved or revolute, 1 lin. long. Limb of the petals ovate-oblong, obtuse, 1¼ lin. long. Limb of the lip fleshy, broadly rounded or somewhat bilobed, 1 lin. long; base sagittately produced into a pair of linear-clavate, recurved, fleshy processes, ½ lin. long. Column united to the perianth-tube nearly to its apex; free part clavate, 1 lin. long; apex with a pair of short, obovate wings; rostellum similar to but broader than the column.

Upper Guinea. Cameroon Mountains, 4000 ft., *Mann*, 1336!
Lower Guinea. Island of St. Thomas: 3000 ft., *Mann*, 1097! San Pedro, 3300 ft., *Moller and Quintas!* Angra de S. João, in Angolares, 300 ft., *Quintas*, 92!

27. **POGONIA,** Juss.; Benth. et Hook. f. Gen. Pl. iii. 615.

Sepals subequal, free, erect or rarely spreading. Petals similar to the sepals, or often broader or shorter, erect or declinate. Lip erect from the base of the column, free, without a spur, sessile or unguiculate, entire or trilobed; side lobes sometimes enfolding the column; disc variously crested or lamellate. Column elongated, slightly clavate at the apex, without wings; clinandrium more or less elevated, entire or denticulate. Anther somewhat stipitate on the margin of the clinandrium, more or less incumbent, obtusely conical or subglobose, imperfectly 2-celled; pollinia granular, 2, sometimes confluent into one, not tailed, free or sessile on the rostellum. Stigma oblong or broad; rostellum short.—Terrestrial herbs. Rhizomes tuberiferous. Leaves 1 to few, very various in shape, often not appearing until after the flowers. Flowers medium-sized or large, solitary or in erect or pendulous racemes. Bracts often small.

A genus of about 60 species, widely dispersed through the tropics, with a few temperate representatives in North and South America and Japan.

Side lobes of lip rounded, oblong or obscure, obtuse.
Scapes over $\frac{1}{2}$ ft. high.
Flowers in racemes.
Column dilated above . . . . . 1. *P. umbrosa.*
Column not dilated above . . . . 2. *P. viridiflava.*
Flowers 1 or 2 at the summit of the scape.
Front lobe of lip broad and nearly flat . . 3. *P. shirensis.*
Front lobe of lip narrow and strongly reflexed . 4. *P. Buchanani.*
Scapes 2–3 in. high . . . . . 5. *P. Thouarsii.*
Side lobes of lip triangular, acute . . . . 6. *P. Kotschyi.*

1. **P. umbrosa,** *Reichb. f. in Flora,* 1867, 102. Tuber ovoid-globose. Leaf solitary, long petiolate; limb broadly ovate-reniform or flabellate, repand or sinuate, more or less broadly apiculate or acute, $3\frac{1}{2}$–6 in. long, $2\frac{3}{4}$–7 in. broad; petioles $1\frac{1}{4}$–8 in. long. Scapes $1\frac{1}{4}$–$2\frac{1}{4}$ ft. long; raceme 2–8 in. long, 3–12-flowered. Bracts linear or linear-lanceolate, acuminate, $\frac{1}{2}$–1 in. long. Pedicels slender, 3–4 lin. long. Flowers light green with a purple-veined white lip. Sepals lanceolate, acute, or subacuminate, 10–13 lin. long. Petals similar to, but a little shorter than, the sepals. Lip subtrilobed, 1 in. long, $\frac{3}{4}$ in. broad; side lobes broadly rounded; front lobe ovate-triangular, acute; disc with a pair of slightly thickened keels from the base to the middle. Column slightly curved, a little thickened above, 4 lin. long; filament of the anther slender, $1\frac{1}{2}$ lin. long. Capsule broadly elliptic-oblong, 6–7 lin. long.

Upper Guinea. Sierra Leone, near Falaba, *Scott-Elliot,* 5119! Niger Territory: Nupe, among grass and low shrubs in shady places, *Barter,* 1540!

Lower Guinea. Princes Island, *Mann,* 1149! St. Thomas, 1300 ft., *Quintas,* 4! 5! 13! near Fazenda do Monte Caffe, *Welwitsch,* 739! Island of Rolas; on Mount Greeff, *Quintas,* 63! Angola: Pungo Andongo; near the River Quilonga, in woods, *Welwitsch,* 738!

Very near to the South African *P. purpurata,* Reichb. f.

2. **P. viridiflava,** *Reichb. f. in Flora,* 1882, 532. Allied to *P.*

renschiana, Reichb. f., and *P. umbrosa*, Reichb. f. Lip trilobed; front lobe crisped, oblong, porrect; keels 2, distant, extending the whole length of the disc. Column broad, not dilated at the fovea.—Durand & Schinz, Conspect. Fl. Afr. v. 59 ("*viridiflora.*")

Lower Guinea. Angola: Malange, *Mechow*, 298.

I have not seen a specimen of this, but the differences pointed out by Reichenbach between it and *P. umbrosa* are trifling.

3. **P. shirensis,** *Rolfe.* Scapes tall; apex 1–2-flowered; base not seen. Bracts linear-lanceolate, acuminate, $\frac{3}{4}$–1 in. long. Pedicels 6–8 lin. long. Sepals oblong-lanceolate, acute, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long. Petals similar to, but a little smaller than, the sepals. Lip broadly obovate, trilobed, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long, and nearly as broad; lobes broadly rounded; front one crenulate; disc with 2 narrow, ciliolate keels from the base to the middle. Column clavate, 1 in. long.

Mozamb. Dist. British Central Africa: Shire Highlands, not plentiful, *Buchanan*, 317!

4. **P. Buchanani,** *Rolfe.* Plant about 1 ft. high. Scapes bearing about 3 loose, ovate, acute sheaths, and 2 large flowers at the apex. Bracts linear-lanceolate, long acuminate, 9–13 lin. long. Pedicels 4 lin. long. Sepals lanceolate, acute, 14–16 lin. long. Petals similar to, but a little shorter than, the sepals. Lip broadly obovate, subtrilobed at the apex, 1 in. long, 8–9 lin. broad; side lobes obtuse; front lobe ovate-oblong, strongly reflexed, somewhat fleshy; disc with 2 acute keels from the base to near the apex. Column clavate, $\frac{3}{4}$ lin. long.

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan*, 1342!

5. **P. Thouarsii,** *Blume, Coll. Orch. Archip. Ind.* 152, *t.* 59, *fig.* 1. Plant 2–3 in. high. Leaves broadly cordate, subobtuse, somewhat repand, about $1\frac{3}{4}$ in. broad, with broad, obtuse, basal angles. Scapes 2–3 in. high, slender, 1-flowered, with 1 or 2 narrow basal sheaths. Bract narrow, sheath-like, subacute, 2–4 lin. long. Pedicels 6–9 lin. long. Sepals and petals linear-lanceolate, acute, 5–6 lin. long. Lip broadly cuneate-oblong, truncate, or obscurely trilobed at the apex and fimbriate, 5–6 lin. long, $2\frac{1}{2}$–3 lin. broad; disc with several crenulate diverging nerves. Column clavate, $3\frac{1}{2}$–4 lin. long.—*Arethusa simplex*, Thou. Orch. Iles Afr. t. 24. *Pogonia simplex*, Reichb. f. Xen. Orch. ii. 92.

Upper Guinea. Sierra Leone; without precise locality, *Afzelius!*

Also found in Mauritius, if the African specimens are identical, and I am unable to separate them from the plant figured by Thouars. Specimens, however, are wanting for comparison.

6. **P. Kotschyi,** *Reichb. f. in Oestr. Bot. Zeitschr.* 1864, 338. Flowers racemose, greenish, with the lip white, nerved with violet-purple. Sepals ligulate, acute. Petals slightly shorter than the sepals. Lip oblong-flabellate, trifid at the apex, smooth except for a few papillæ upon the three thickened median nerves; lobes triangular,

acute; front lobe longer and slightly broader than the side lobes. Column clavate, obtuse-angled on either side of the apex.

Nile Land. Upper Senaar: near Fazokl, *Cienkowsky*, 236.

Only known to me from the original description, but said to be allied to *P. carinata*, Lindl.

28. **EPIPOGUM**, Gmel.; Benth. et Hook. f. Gen. Pl. iii. 617.

Sepals subequal, free, narrow, erect or ultimately spreading. Petals similar to the sepals. Lip sessile at the base of the column, ovate, broadly concave at the base or extended in a sac or short obtuse spur; side lobes auriculate or obsolete; front lobe spreading; disc papillose. Column short, thickened at the apex; clinandrium short or with a dilated margin. Anther somewhat stipitate, incumbent, or suberect, much thickened at the back, 2-celled; pollinia 2, granular, often affixed by a pair of filiform stipites to a broad gland. Stigma broad, somewhat distant from the short, broad rostellum. Capsule ovoid, pendulous.—Leafless saprophytic herbs, with a nodose or somewhat tuberous rhizome. Scapes simple, with a few basal sheaths. Flowers few, in a lax raceme, pedicelled, spreading or pendulous. Bracts small.

A genus of 2 species, one sparingly dispersed in Europe and temperate Asia, the other found in India, Java, Australia, and West Tropical Africa.

1. **E. nutans,** *Reichb. f. in Bonplandia*, v. 36. Tuber ovoid or oblong, $\frac{3}{4}$–$1\frac{1}{2}$ in. long. Scapes $\frac{1}{2}$–$1\frac{1}{2}$ ft. long, with numerous broad, loose sheaths, 3–9 in. long. Bracts ovate or ovate-lanceolate, acute, 3–6 lin. long. Pedicels 2–3 lin. long. Flowers white, with purple spots. Sepals lanceolate, acute, 3–4 lin. long. Petals similar to, but a little shorter than, the sepals. Lip broadly ovate, concave, acute or acuminate, crenulate, 4–5 lin. long; disc with a pair of verrucose keels from the base to near the apex. Column stout, about 1 lin. long.—Lindl. in Journ. Linn. Soc. i. 177; vi. 137; Benth. Fl. Austral. vi. 308; Hook. f. Fl. Brit. Ind. vi. 124. *Galera nutans*, Blume, Bijdr. 416, fig. 3; Blume, Mus. Bot. Lugd. Bat. ii. 187. Blume, Coll. Orch. Archip. Ind. 139, t. 52, fig. 3, t. 54, fig. E. *Limodorum roseum*, Don, Prod. Fl. Nep. 30. *Ceratopsis rosea*, Lindl. Gen. & Sp. Orch. 384. *Galera rosea*, Blume, Mus. Bot. Lugd. Bat. ii. 188; Blume, Coll. Orch. Archip. Ind. 139. *Podanthera pallida*, Wight, Ic. Pl. Ind. Or. v. 22, t. 1759. *Epipogum roseum*, Lindl. in Journ. Linn. Soc. i. 177. *E. Guilfoylii*, F. Muell. Fragm. viii. 30; Benth. Fl. Austral. vi. 308.

Upper Guinea. Cameroons: Ambas Bay, *Mann*, 784!

Also found in North and South India, Ceylon, Java, and Australia.

29. **EPIPACTIS**, R. Br.; Benth. et Hook. f. Gen. Pl. iii. 619.

Sepals free, spreading, subequal. Petals scarcely smaller than the sepals. Lip sessile at the base of the column; basal part, or hypochile, broad and concave, rarely with a pair of staminodes at the base; front part, or epichile, articulated to the lower part, usually

ovate or pandurate. Column short, flat or concave in front; clinandrium short. Anther erect, ovate, slightly convex, 2-celled; pollinia powdery or granular, free or affixed to a small gland. Stigma broad and prominent; rostellum broad. Capsule oblong, spreading or pendulous.—Terrestrial herbs, with creeping rhizomes, and simple, erect, leafy stems. Leaves ovate or lanceolate, plicate-veined. Flowers medium-sized, green or purplish, shortly pedicelled, drooping, arranged in a secund raceme. Bracts herbaceous, narrow; lower often longer than the flowers.

A genus of about 12 species, widely dispersed through the temperate and mountain regions of the northern hemisphere, with the two following African representatives.

Sepals acuminate; hypochile with a pair of linear-oblong staminodes at the base . . . . . 1. *E. africana*.
Sepals subobtuse; hypochile without staminodes . . 2. *E. somaliensis*.

1. **E. africana,** *Rendle in Journ. Bot.* 1895, 252. Plant 1¼–2 ft. high, ferruginous-pubescent. Leaves ovate or ovate-oblong, subobtuse, amplexicaul, recurved, very strongly nerved; lower ones 3 in. long, 1½ in. broad, decreasing upwards into the bracts. Racemes more or less elongate. Bracts leaf-like; the lower 1¼ in. long. Pedicels ½–1¼ lin. long. Dorsal sepal lanceolate, acute, 6–7 lin. long; lateral with a broadly ovate, oblique base, 3 lin. long, and a narrowly falcate-acuminate apex, 5–6 lin. long. Petals ovate, acuminate, subfalcate, 6–7 lin. long. Lip 8 lin. long; hypochile narrowly oblong, concave, 4 lin. long; epichile broadly ovate, acute, 4½ lin. long; base of the lip with a pair of free, linear-oblong, subobtuse, membranous, nerved, staminodes, 3½ lin. long. Column 2½ lin. long.

Nile Land. British East Africa: Ruwenzori, Butagu, 8000–10,000 ft., among heather, *Scott-Elliot*, 8005!

The staminodial appendages at the base of the lip are anomalous in the genus.

2. **E. somaliensis,** *Rolfe*. Plant 1–2 ft. high, fuscous-pubescent. Leaves lanceolate or subovate-lanceolate, attenuate, sessile, suberect, the largest 6 in. long, ¾ in. broad, decreasing into sheaths below and bracts above. Racemes 5–12 in. long, many-flowered. Bracts leaf-like, the lowest over 2 in. long, the upper ½ in. long. Pedicels ½–¾ in. long. Flowers greenish-brown. Dorsal sepal ovate, subobtuse, 5–6 lin. long; lateral obliquely semiovate, 6–7 lin. long, 3 lin. broad. Petals ovate, subobtuse, 5–6 lin. long. Lip 6 lin. long; hypochile narrowly obovate-oblong, concave, 2½ lin. long; epichile pandurate-ovate, subobtuse or apiculate, 4 lin. long, broad at the base, much narrower above. Column 2 lin. long.

Nile Land. Somaliland: Golis Range, at Woob, in the river bed, *Mrs. Lort Phillips! Miss E. Cole!*

Allied to the preceding, but very different in the shape of the leaves, sepals and petals, and the details of the lip.

30. **STENOGLOTTIS,** Lindl.; Benth. et Hook. f. Gen. Pl. iii. 622.

Sepals free, subequal, ultimately spreading. Petals somewhat narrower than the sepals, and suberect. Lip continuous with the base

of the column, cuneate-oblong, without a spur, 3–5-fid at the apex. Column very short and broad; clinandrium broad and erect, thickened at the margin. Anther cells parallel; pollinia granular, affixed by a short stipes to a small, oblong gland; staminodes lateral, oblong, tuberculate or glandular at the apex. Stigmatic processes 2, clavate or capitate, short; rostellum broad and minute. Capsule oblong, erect.—Terrestrial herbs, with short stems, and tuberiferous or thickened, fleshy, fasciculate roots. Leaves radical, numerous, rosulate or tufted. Flowers small, shortly pedicellate, arranged in loose somewhat one-sided racemes. Bracts small.

A genus of 3 species, the remaining 2 being extra-tropical South African.

1. **S. zambesiaca,** *Rolfe.* Plant 6–15 in. high. Leaves 7–12, radical, tufted, lanceolate, acute, narrowed and almost petiolate above the sheathing base, $2\frac{1}{2}$–$5\frac{1}{2}$ in. long. Scapes 6–15 in. long; racemes elongate, laxly many-flowered, subsecund, $2\frac{1}{2}$–6 in. long. Bracts lanceolate, acuminate, $1\frac{1}{2}$–5 lin. long. Pedicels 3–4 lin. long. Sepals ovate-oblong, obtuse, $1\frac{1}{2}$ lin. long. Petals suborbicular-oblong, as long as but rather broader than the sepals. Lip $3\frac{1}{2}$ lin. long, cuneate-linear, apical third trilobed; side lobes oblong, obtuse; front lobe linear, obtuse, 1 lin. long, much narrower and slightly shorter than the side lobes. Column stout, $\frac{1}{2}$ lin long.

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan*, 385!

Has the habit of the Natal *S. longifolia*, Hook. f., but is markedly different in its trilobed lip. From *S. fimbriata*, Lindl., it differs in the shape of the leaves, and in various other details. Cultivated specimens introduced by Mr. Buchanan flowered in the Edinburgh Botanic Garden, in 1881.

31. **HOLOTHRIX,** Rich.; Benth. et Hook. f. Gen. Pl. iii. 623.

Sepals subequal, connivent, herbaceous, sometimes hairy. Petals longer than the sepals, narrow, entire or variously divided at the apex. Lip adnate to the base of the column, erect or spreading, concave or involute at the sides, divided into from three to many segments at the apex, produced at the base into a straight or curved spur. Column very short, usually auricled at the sides of the stigma; clinandrium erect, broad, concave or almost cucullate; connective of the anther not distinct from the clinandrium; cells ovoid, adnate, distinct, included; pollinia coarsely-granular, with very short caudicles, terminating in a small naked gland; stigma bipartite. Capsule ovoid or oblong.—Terrestrial herbs, with one or two, sessile, ovate or orbicular-reniform, radical leaves. Scapes slender, usually hairy and without sheaths. Flowers small, in slender, usually secund spikes.

A genus of about 40 species, most numerous in extra-tropical South Africa, with two representatives in Madagascar and one in the Comoro Islands.

Petals and lip shortly lobed or entire.
Petals and lip less than 4 lin. long.
Lip entire.

Lip subspathulate, subacute	1. *H. puberula.*
Lip cuneate-oblong, obtuse	2. *H. brongniartiana.*

Lip tridentate or trilobed.
  Spur more or less conical.
    Petals thickened and fleshy . . . . 3. *H. Richardii.*
    Petals caudate-acuminate . . . . 4. *H. vatkeana.*
  Spur filiform . . . . . 5. *H. Usambaræ.*
Lip five-lobed . . . . . 6. *H. arachnoidea.*
Lip seven-lobed.
  Petals twice as long as the sepals . . . 7. *H. Nyassæ.*
  Sepals and petals subequal.
    Sepals tridentate . . . . . 8. *H. tridentata.*
    Sepals acute . . . . . 9. *H. platydactyla.*
  Lip with about 12 linear segments . . . 10. *H. pleistodactyla.*
Petals and lip ½ inch long . . . . . 11. *H. Johnstoni.*
Petals and lip divided above into long filiform segments.
  Petals and lip 1¼–1½ in. long.
    Spur very strongly recurved . . . . 12. *H. longiflora.*
    Spur slightly recurved . . . . . 13. *H. Medusæ.*
  Petals and lip scarcely ¾ in. long . . . . 14. *H. Lastii.*

1. **H. puberula,** *Rendle in Journ. Bot.* 1895, 278. Plant about 4 in. high. Leaves 2, radical, ovate-orbicular, subacute, 9–10 lin. long, 13–14 lin. broad. Scapes about 4 in. long, puberulous, without sheaths; racemes subsecund, lax, 1¼ in. long, about 10-flowered. Bracts ovate, acuminate or aristate, carinate, 2 lin. long. Pedicels 1½–2 lin. long. Sepals ovate-triangular, acuminate, 1½ lin. long. Petals triangular-lanceolate, acuminate, 2 lin. long. Lip subspathulate, subacute or apiculate, entire, 3½ lin. long, 1⅓ lin. broad; spur slender, recurved, 1¼ lin. long. Column stout, ½–¾ lin. long.

Mozamb. Dist. German East Africa: Kilimanjaro, 6000 ft., *Johnston!* Ukambane, Masai Highlands, 5000–6000 ft., *Scott-Elliot,* 6486!

2. **H. brongniartiana,** *Reichb. f. Otia Bot. Hamb.* ii. 107. Leaves 2, broadly ovate, subacute, radical and appressed to the soil, glabrous. Pedicels slender, 2 in. long, retrorsely pilose; spike somewhat one-sided. Bracts lanceolate, acuminate, nearly equal to the pedicelled ovary, which is hispid below. Sepals oblong, apiculate, very slightly velvety or almost smooth outside. Petals ovate, falcate, aristate. Lip cuneate-oblong, obtuse; apex very entire or few-toothed; spur slender, half as long as the ovary.

Nile Land. Abyssinia: Semen; Agrina, on mountains, 6000–7000 ft., *Schimper,* 651, also at Debra Erki, near Woina, 7000 ft., rare, *Schimper,* 651, Begemeder; on mountains, 7500 ft., *Schimper,* 1329!

3. **H. Richardii,** *Rolfe.* Plant 5–6 in. high. Leaves 2, radical, subopposite, ovate, subacute, delicately membranous, reticulate-veined, long pilose, ¾–1½ in. long, ½–1¼ in. broad. Scapes 5–6 in. high, retrorsely pilose. Spikes short, subspiral, few-flowered. Bracts ovate or ovate-lanceolate, acute or acuminate, 1¼–1½ lin. long. Pedicels 1 lin. long, pilose. Sepals ovate, subacute or obtuse, ¾ lin. long. Petals ovate-lanceolate, thickened and fleshy above, subobtuse, 1–1¼ lin. long. Lip cuneate-oblong; base concave; apex tricuspidate with narrow, equal

segments; spur narrowly subconical, subobtuse, membranous, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. long. Column very short and stout.—*Peristylus arachnoideus*, A. Rich. in Ann. Sci. Nat. sér. 2, xiv. 267; A. Rich. Tent. Fl. Abyss. ii. 289; Reichb. f. in Walp. Ann. iii. 583. *Holothrix arachnoidea*, Durand & Schinz, Conspect. Fl. Afr. v. 69, in part. *Platanthera arachnoidea*, Engl. Hochgeb. Fl. Trop. Afr. 179.

Nile Land. Abyssinia, *Schimper*, 504!

4. **H. vatkeana,** *Reichb. f. in Journ. Bot.* 1876, 346. Plant over 1 ft. high, slender. Leaves, peduncle, bracts, and ovary pilose; flowers glabrous. Tubers ovoid-oblong. Leaves 2, radical, spreading, ovate or ovate-oblong, subobtuse or apiculate, 1–$1\frac{1}{4}$ in. long, 8 lin. broad. Scapes over 1 ft. long, sparsely pilose. Racemes 3 in. long, lax, many-flowered; flowers subsecund. Bracts triangular-lanceolate, acute, $1\frac{1}{4}$ lin. long. Pedicels $1\frac{1}{2}$ lin. long. Sepals triangular, acute, $\frac{3}{4}$ lin. long. Petals lanceolate, 2 lin. long; apex caudate-acuminate. Lip $1\frac{1}{2}$ lin. long, trifid to the middle; lobes linear, subacute; spur conical-oblong, incurved at the apex, scarcely $\frac{3}{4}$ lin. long.—Reichb. f. Otia Bot. Hamb. ii. 72. Schweinf. in Bull. Herb. Boiss. ii. App. ii. 87, 112.

Nile Land. Eritrea: Ambelaco, near Maldi, 6500 ft., *Schweinfurth*, 159; Plateau, of Kohaito, 8400 ft., *Schweinfurth*, 160; Asmara, 8100 ft., *Schweinfurth*, 548; Geleb, on the River Sabber, 6500 ft., *Schweinfurth*, 1536; Peak of Alamkale Mountain, 5900 ft., *Schweinfurth*, 1629. Somaliland; Serrut Mountains at Meid, on limestone, 1800, *Hildebrandt*, 1465!

Also found in Arabia.

5. **H. Usambaræ,** *Kränzl. in Engl. Jahrb.* xix. 248. Leaves 2, subopposite, or rarely 3, oblong or oblong-lanceolate, acute or acuminate. Scapes about 9 in. long, naked below, sparsely pilose above with glanduliferous hairs, and two or three minute sheaths; spikes secund, 6–20-flowered. Bracts lanceolate, acuminate, one-third as long as the ovary. Dorsal sepal broadly ovate, cucullate, acute; lateral semioblong, with arching nerves, acute. Petals much smaller than the sepals, oblong, acute, one-nerved. Lip simple, cuneate; apex retuse, tridentate or obscurely trilobed; spur filiform, deflexed or incurved, $\frac{1}{2}$–$\frac{2}{3}$ as long as the ovary. Column short and stout.

Mozamb. Dist. German East Africa: Usambara; high region, in gravel, *Holst*, 391.

Only known to me from the original description, but said to have the habit of *H. orthoceras*, Reichb. f.

6. **H. arachnoidea,** *Reichb. f. Otia Bot. Hamb.* ii. 107 (*excl. syn.*). Leaves 2, equal, ovate, transverse, subacute or the upper one acute, areolate when dried, as in *Satyrium;* base subcordate. Peduncle elongate, hispid with deflexed hairs; spikes 6–10-flowered. Bracts lanceolate, acuminate, pilose, as long as the ovary. Flowers yellow. Sepals lanceolate, aristate. Petals scarcely longer than the sepals, oblong, abruptly cuspidate with much exserted apex. Lip cuneate-flabellate, 5-lobed in front; lobes ligulate, acute; disc papillose; spur

conical, small, $\frac{1}{4}$–$\frac{1}{6}$ as long as the limb.—Durand & Schinz, Conspect. Fl. Afr. v. 69, in part.

Nile Land. Abyssinia: Debra Erki, near Woina, on mountains, 7000 ft., *Schimper*, 759 (ex *Reichenbach*). Begemeder; Mt. Semayata, among grasses, *Schimper*, 504!

Clearly distinct from *H. Richardii*, Rolfe, with which it has been confused.

7. **H. Nyasæ,** *Rolfe.* Plant 9–10 in. high. Leaves 1 or 2 (?), orbicular or broadly cordate-orbicular, long pilose, about $\frac{3}{4}$ in. long, 1 in. broad. Scapes 9–10 in. long, densely pilose; racemes 2 in. long, secund, 12–14-flowered. Bracts ovate, acute, 2 lin. long. Pedicels 2 lin. long. Sepals ovate, acute, pilose-ciliate, $1\frac{1}{4}$ lin. long. Petals cuneate-linear, $2\frac{1}{2}$ lin. long; apex tricuspidate. Lip flabellate, $2\frac{1}{2}$ lin. long; apex shortly 7-lobed; lobes triangular-linear. Column stout, $\frac{3}{4}$ lin. long.

Mozamb. Dist. Portuguese East Africa: mountains east of Lake Nyasa, *Johnson!*

8. **H. tridentata,** *Reichb. f. Otia Bot. Hamb.* ii. 119. Plant $2\frac{1}{2}$–5 in. high. Tubers ovoid-globose, 3–4 lin. long. Leaves 2, radical, subopposite, orbicular, ciliate, 5–7 lin. long; the upper generally smaller than the lower. Scapes $2\frac{1}{2}$–5 in. long, retrorsely pilose, more pubescent above, without sheaths; racemes $\frac{1}{2}$–1 in. long, 4–12-flowered. Bracts triangular-ovate, acute or subacuminate. Pedicels 1 lin. long. Sepals ovate, 1 lin. long; apex unequally tricuspidate; side lobes short and obtuse; middle lobe longer, subulate. Petals broadly elliptic-oblong, $1\frac{1}{4}$ lin. long; apex very unequally tridentate; side lobes short and obtuse; middle lobe long, cuspidate. Lip 2 lin. long, broadly oblong below, upper half divided into 7 diverging, unequal, oblong, subobtuse lobes; spur broadly conical, horizontal, somewhat curved, scarcely $\frac{1}{4}$ lin. long. Column stout, $\frac{1}{2}$ lin. long.—*Peristylus tridentatus*, Hook. f. in Journ. Linn. Soc. vii. 221. *Platanthera tridentata*, Engl. Hochgeb. Fl. Trop. Afr. 179.

Upper Guinea. Cameroons: 7000 ft., *Mann*, 2128! 8000–11,000 ft., *Johnston!*

9. **H. platydactyla,** *Kränzl. in. Engl. Jahrb.* xvii. 66. Tubers small, globose. Leaves 2, subopposite, the upper rather smaller than the lower, 6–8 in. long, about as broad, thick and fleshy, suborbicular, acute or subobtuse; margin ciliate. Scapes 5–$6\frac{1}{2}$ in. long, slender, densely pilose or villose, without sheaths; racemes 1 in. long, subsecund, few–8-flowered. Bracts ovate-lanceolate, acuminate or aristate, 2 lin. long. Pedicels $1\frac{1}{2}$–2 lin. long. Sepals triangular-ovate, acute, 1 lin. long. Petals obliquely obovate-oblong, acuminate, with a tooth on either side above the middle, $1\frac{3}{4}$ lin. long. Lip 2 lin. long. flabellately 7-lobed, with obovate-oblong, obtuse lobes, the two outer shorter, narrower and more acute. Column very stout, $\frac{1}{2}$ lin. long.

Upper Guinea. Cameroons; Buea, in the grass region, 7200 ft., *Preuss*, 1036!

10. **H. pleistodactyla,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 151. Plant 6–7 in. high. Leaves 2, subopposite, very unequal, the lower

reniformly orbicular, with subcordate base, crenulate, somewhat ciliate, strongly reticulate-veined, 7–8 lin. long, the upper similar but not ¼ as large. Scapes 6–7 in. long, retrorsely pilose, without sheaths; racemes secund, about 1 in. long, many-flowered. Bracts ovate, acuminate, pubescent, 1½ lin. long. Pedicels very short. Flowers 2 lin. diam., yellowish-white or brown. Sepals ovate, acute, long pilose, 1¼ lin. long. Petals cuneate, pentadactylous in front, 2½ lin. long. Lip flabellate, polydactylous, 2½ lin. long; segments about 12, linear, diverging, ⅓ as long as the blade of the petals and lip. Column stout, ½ lin. long.—Kränzl. in Engl. Jahrb. xxii. 17.

Mozamb. Dist. German East Africa: Kilimanjaro; Marangu (at the foot of Kifinika), 8800 ft., *Volkens*, 1314!

11. **H. Johnstoni,** *Rolfe in Kew Bulletin*, 1896, 47. Leaves radical, spreading, opposite or nearly so, very shortly petioled, ovate, subacute or apiculate, sparingly pilose, very ciliate, 1¼–2¼ in. long, 8–12 lin. broad. Scapes 5–10 in. high, long pilose; racemes secund, 1–2 in. long, 6–10-flowered. Bracts ovate, acute, concave, pilose, 1½–3 in. long. Pedicels 2 lin. long. Sepals oblong, obtuse, concave, connivent, 2½–3 lin. long; apex pilose. Petals linear, obtuse, 5–6 lin. long. Lip 4–5 lin. broad, oblong at the base; apex with 5 spreading, oblong, obtuse lobes; spur conical, obtuse, ½ lin. long. Column stout, ½ lin. long.

Mozamb. Dist. British Central Africa: Nyasaland; upper plateau of Mt. Mlanje, *Johnston!* Zomba, *Whyte*, 101!

Near the South African *H. condensata*, Sond., but the flowers are larger, and the lip 5-lobed.

12. **H. longiflora,** *Rolfe in Bolet. Soc. Brot.* vii. 237. Plant 1½ ft. high. Leaves 2, radical, reniform, cordate, very shortly mucronulate, reticulate-veined, 2 in. long, 2½ in. broad. Scapes pubescent, 1½ ft. long; racemes subsecund, 4–5 in. long, 16–20-flowered. Bracts lanceolate-ovate, acuminate, villous, 2½–3 lin. long. Pedicels 3 lin. long. Sepals ovate-oblong, acuminate-apiculate, 1-nerved, villous, 4 lin. long. Petals glabrous, cuneate-linear, 1½ in. long, 3-nerved at the base, thin, 9-nerved and divided above into 9 filiform segments. Lip much like the petals, but 1-nerved at the base, 15-nerved above, and divided into 15 filiform segments; spur conical at the base, strongly recurved, acute, over 1 lin. long. Column stout, very short; apex biauriculate.

Lower Guinea. Angola, Huilla, *Antunes*, 20!

Allied to *H. grandiflora*, Reichb. f., but the flowers are twice as large. In the original description the petals, by a misprint, are given as only ½ in. long.

13. **H. Medusa,** *Kränzl. in Notizbl. K. Bot. Gart. Berlin*, 1896, 154. Whole plant except the flowers densely pilose. Leaves 1–2, orbicular (?). Stem 1 ft. high, with a sheath about the middle; spike secund, 10–15-flowered. Bracts distinctly shorter than the ovary.

Flowers white, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long. Sepals triangular, acuminate, 1-nerved; margin ciliate. Petals much longer than the sepals, basal part linear, $\frac{1}{2}$ in. long; upper part divided into many filiform segments. Lip a little longer, and twice as broad, in other respects similar to the petals, the entire base and the segments each 7–8 lin. long; spur short, slightly recurved, obtuse. Column broad, acute; base with a pair of broad lamellæ.

Lower Guinea. Angola: Huilla, Muscha, in dry soil, *Newton*.

Only known to me from the original description, but must be nearly allied to the preceding.

14. **H. Lastii,** *Rolfe*. Scapes 9 in. or more long (base not seen), ferruginous, pubescent. Racemes 2 in. long, few- to many-flowered. Bracts ovate-lanceolate, acuminate, 3–4 lin. long. Sepals ovate-lanceolate, acuminate, 2 lin. long. Petals cuneate-oblong, 7–8 lin. long, the upper half broken up into about 7 long, subfiliform segments. Lip similar, but broader and with more numerous segments. Column short and stout.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, near Blantyre, *Last!*

A distinct but imperfectly known species.

32. **DERŒMERIA,** Reichb. f. De Poll. Orch. 29.

Sepals subequal, connivent, herbaceous, usually glabrous. Petals longer than the sepals or subequal, narrow, entire or somewhat divided at the apex. Lip adnate for a long distance to the column, erect, concave or involute at the sides, entire or somewhat lobed, produced at the base into a curved spur. Column short, usually auricled at the sides of the stigma; clinandrium erect, broad, concave, or almost cucullate; connective of the anther not distinct from the clinandrium; cells ovoid, adnate, distinct, included; pollinia coarsely-grained, with very short caudicles, terminating in a small naked gland; stigma sunk within the tube formed by the union of the lip and column. Terrestrial herbs leafless at the flowering time or with a large orbicular radical leaf. Scapes stout, glabrous or hairy, and with numerous lanceolate, acuminate, often imbricate, sheaths. Flowers small, usually in dense or unilateral spikes.

A genus of eight species, peculiar to Tropical Africa, with the exception of one Arabian representative. Bentham reduces it to *Habenaria*, but it is much nearer to *Holothrix*, chiefly differing in the very distinct habit, and in the greater union of the auricled lip to the column, the stigma being sunk in the tube thus formed. In several cases radical leaves are not known, presumably because they wither before the flowers appear, as is known to occur in *D. Schimperi* and *D. unifolia*.

Lip entire . . . . . 1. *D. squamata.*
Lip more or less distinctly trilobed or tridentate.
  Petals spathulate, obtuse or obscurely trilobed . . 2. *D. montigena.*
  Petals ovate, acuminate, sometimes obscurely toothed near the apex . . . . . 3. *D. acuminata.*

Petals ligulate, tridentate at the apex . . . 4. *D. Schimperi.*
Petals oblong, toothed at the sides, apex extended into one or several threads . . . . . 5. *D. præcox.*
Petals lanceolate-oblong, trilobed to near the middle . 6. *D. triloba.*
Lip minutely 5-lobed . . . . . 7. *D. unifolia.*

1. **D. squamata,** *Reichb. f. De Poll. Orch.* 29. Plant 4–5 in. high, leafless at flowering time. Tubers ovoid or oblong, ¾–1 in. long. Scapes stout, 4–5 in. long, with numerous imbricate, triangular-ovate, acute sheaths, 3–6 in. long. Bracts ovate or ovate-lanceolate, acuminate, 2–3 lin. long. Pedicels 1–1½ lin. long. Sepals ovate or ovate-oblong, obtuse, 1–1¼ lin. long. Petals ovate-oblong, obtuse, entire, slightly longer than the sepals. Lip broadly oblong, obtuse, entire, 1½ lin. long, united at the base to the sides of column. Spur conical, obtuse, ¾–1 lin. long. Column stout, ½ lin. long.—Reichb. f. in Flora, 1853, 750; Walp. Ann. iii. 579; Engl. Hochgeb. Fl. Trop. Afr. 185. *Peristylus squamatus,* Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 289. *Spiranthes abyssinica,* Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 289 (in note). *Holothrix squamata,* Reichb. f. Otia Bot. Hamb. ii. 119.

Nile Land. Abyssinia: Semen; in dry fields near Endjedcap, *Schimper,* 982! 1164! Shoa; Jamma, *Steudner,* 694, near Gaint, *Steudner,* 695 (ex *Engler*).

2. **D. montigena,** *Rolfe.* Plant 5–8 in. high. Tuber oblong or ovate, 7 lin. long. Leaves single, amplexicaul, very broadly rounded, 1½–2 in. broad. Scapes fairly stout, 5–8 in. long, villous at the base, glabrous above, with several ovate or lanceolate, acuminate sheaths. Racemes dense, 1–2 in. long; flowers subsecund. Bracts lanceolate, acuminate, 2–3 lin. long. Pedicels 1½ lin. long. Sepals ovate, subobtuse, or apiculate, 1 lin. long; lateral suboblique. Petals spathulate, obtuse, 1½ lin. long. Lip 1¼ lin. long, with suborbicular limb; apex obscurely trilobed; spur narrowly conical, slightly curved, subobtuse. 1½ lin. long.—*Holothrix montigena,* Ridl. in Journ. Bot. 1886, 295.

Nile Land. Abyssinia: Begemeder; Gafat, in dry places, half shaded by small bushes, 8400 ft., *Schimper,* 1372!

3. **D. acuminata,** *Rendle & Schlechter in Journ. Bot.* 1895, 277. Plant 6 in. high, glabrous, leafless at flowering time. Scapes with numerous short, triangular-lanceolate, acute sheaths. Racemes lax, about 2½ in. long, 14-flowered. Bracts lanceolate or ovate-lanceolate, acute, 1½–2 lin. long. Pedicels 2 lin. long. Sepals ovate or ovate-oblong, subacute, 1¼ lin. long. Petals ovate, acuminate, sometimes with an obscure tooth on either side below the apex, 1¾ lin. long. Lip 1¾ lin. long, with broad, cymbiform, auricled base, partly adnate to the sides of the column; apex broad, shortly tricuspidate; spur straight, 1½–2 lin. long. Column short and stout.

Nile Land. Abyssinia: Begemeder, on Mount Edda Girges, near Adum, 7000 ft., *Schimper,* 790! British East Africa: Nandi Hills, 6000–7000 ft., *Scott-Elliot,* 7049!

Differs from *D. aphylla,* Rendle & Schlechter, in its divided lip and straight spur.

4. **D. Schimperi,** *Rolfe*. Plant glabrous. Leaf orbicular-reniform, $1\frac{1}{4}$ in. broad. Peduncles with many sessile, lanceolate, acuminate sheaths. Racemes spiral. Bracts triangular, acuminate, 3-nerved, nearly as long as the ovary. Sepals lanceolate, triangular, 1-nerved. Petals ligulate; apex tridentate; apical tooth extending beyond the side lobes. Lip cymbiform; apex acute or subtrilobed; middle lobe acute; spur arcuate, acute, scarcely $\frac{1}{2}$ as long as the ovary.—*Holothrix Schimperi*, Reichb. f. Otia Bot. Hamb. ii. 108.

Nile Land. Abyssinia, cultivated specimens, *Schimper*.

Flowered in the Hamburg Botanic Garden, before 1881. I have not seen it.

5. **D. præcox,** *Rendle & Schlechter in Journ. Bot.* 1895, 277. Plant 11 in. high, slender, not hairy, aphyllous when flowering; sheaths about 10, triangular, aristate. Racemes elongate, secund. Bracts lanceolate, as long or slightly shorter than the ovary. Sepals triangular, unequal, dorsal longer than the lateral. Petals oblong, retuse at the apex, angled on either side, extended from the sinus into a straight thread, or in the upper flowers into several threads. Lip adnate to the base of the column, boat-shaped, oblong, acuminate, apex deflexed, with a lateral tooth on either side, sometimes long-toothed, sometimes filiform; spur filiform, as long as the ovary, or longer in the lower flowers. —*Holothrix præcox*, Reichb. f. Otia Bot. Hamb. ii. 108.

Nile Land. Abyssinia: Semen; near Debra Erki, in the shade of trees, amongst rocks, 9400 ft., *Schimper*, 1536.

Only known to me from the original description.

6. **D. triloba,** *Rolfe*. Plant 6–9 in. high, with several narrowly acuminate sheaths below the raceme. Leaves not seen. Racemes $2\frac{1}{2}$–$5\frac{1}{2}$ in. long, subsecund, many-flowered. Bracts lanceolate or ovate-lanceolate, acuminate, 2–$3\frac{1}{2}$ lin. long. Pedicels $1\frac{1}{2}$–2 lin. long. Sepals ovate, apiculate, $1\frac{3}{4}$ lin. long. Petals lanceolate-oblong, 4 lin. long, divided almost to the middle into 3 linear lobes. Lip $3\frac{1}{2}$ lin. long, oblong, apical third divided into 3 linear lobes, the entire base broadly elliptic-oblong; spur cylindrical, acute, curved, 3 lin. long. Column very stout, 1 lin. long. Rostellum triangular, acute, minute.

Mozamb. Dist. German East Africa: higher plateau north of Lake Nyasa, *Thomson!*

7. **D. unifolia,** *Reichb. f. in Bonplandia*, iii. 213. Plant 4–5 in. high. Tuber fusiform or ovate. Leaves orbicular, somewhat acute, cordate. Scapes retrorsely hispid, upper part with several sessile, triangular, acuminate sheaths. Racemes cylindrical, secund. Bracts slightly exceeding the flowers. Sepals ovate, acute. Petals cuneate, ovate, acuminate, longer than the sepals. Lip oblong; apex minutely 5-lobed; spur cylindrical, acute, $\frac{1}{2}$ as long as the ovary.—*Peristylus unifolius*, Hochst. ex Reichb. f. in Bonplandia, iii. 213. *Holothrix unifolia*, Reichb. f. Otia Bot. Hamb. ii. 119; Engl. Hochgeb. Fl. Trop. Afr. 178.

Nile Land. Abyssinia: Semen; in dry meadows near Debra Eski, 9300 ft., *Schimper*, 129.

Only known to me from the original description.

33. **PERISTYLUS,** Blume; Lindl. Gen. & Sp. Orch. 297.

Sepals and petals free, subequal, connivent or subconnivent. Lip continuous with the column, free or slightly adnate to it, produced at the base into a short, sometimes very short, spur; limb erect or somewhat spreading, entire or trilobed. Column short, footless; clinandrium erect, short. Anther cells parallel; apex inferior, short and adnate to the base of the column; pollinia granular, with short caudicles and exserted naked glands; staminodes lateral, auriculate. Stigma sessile; rostellum subulate or tooth-like, situated between the anther cells. Capsule ellipsoid or oblong.

A genus of about 40 or 50 species, dispersed through the north temperate regions, and in the tropics of Asia and Africa, chiefly in the mountains.

Very nearly allied to *Herminium*, and chiefly distinguished by the presence of a distinct spur instead of a gibbous or nearly obsolete sac.

Spur cylindrical, much longer than the lip . . .	1. *P. quartinianus.*
Spur curved, a little shorter than the lip . . .	2. *P. volkensianus.*
Spur oblong, less than half as long as the lip.	
Front lobe of lip linear-oblong (Abyssinian species) .	3. *P. petitianus.*
Front lobe of lip broadly triangular (Cameroon species)	4. *P. Preussii.*
Spur saccate or subglobose, very short.	
Spur obtuse	5. *P. lefebureanus.*
Spur obscurely bilobed	6. *P. Steudneri.*

1. **P. quartinianus,** *A. Rich. in Ann. Sci. Nat. sér.* 2, xiv. 265, *t.* 16, *fig.* 2. Plant $1\frac{1}{4}$ ft. high, 2–3-leaved, with a short sheath near the base. Leaves oblong or lanceolate-oblong, apiculate or acute, 2–3 in. long, $\frac{1}{2}$–1 in. broad. Spikes 4–5 in. long, lax. Bracts lanceolate, acuminate, $\frac{1}{2}$–1 in. long. Pedicels $2\frac{1}{2}$–3 lin. long. Sepals ovate, subacute, carinate near the apex, $1\frac{3}{4}$ lin. long; margin ciliolate. Petals broadly ovate, obtuse, carinate, scarcely ciliolate. Lip $1\frac{1}{2}$–$1\frac{3}{4}$ in. long, trilobed from a short claw; lobes linear, obtuse; front lobe a little longer than the side lobes, incurved; spur cylindrical, subacute, 5 lin. long. Stigmatic lobes oblong, fleshy, apiculate, $\frac{1}{2}$ lin. long. Column very broad, scarcely $\frac{1}{2}$ lin. long; caudicles short. Rostellum oblong, tooth-like, minute.—A. Rich. Tent. Fl. Abyss. ii. 287, t. 85; Reichb. f. in Walp. Ann. iii. 582. *Platanthera quartiniana,* Engl. Hochgeb. Fl. Trop. Afr. 178. *Habenaria rœmeriana,* Durand & Schinz, Conspect. Fl. Afr. v. 85.

Nile Land. Abyssinia: Tigre; around Adowa, *Quartin-Dillon* (ex *Richard*); without precise locality, *Schimper,* 1265!

2. **P. volkensianus,** *Rolfe.* Plant very slender, 2–3 ft. long, leafy in the middle, with several sheaths below. Leaves 5–6, oblong, acute, 4 in. long, $1\frac{1}{2}$ in. broad; base attenuate. Spikes 10 in. long, rather dense-flowered, or more lax at the base. Flowers greenish-yellow, very small. Bracts lanceolate, acuminate, as long as the flowers. Sepals ovate, acute. Petals as long as the sepals, oblong, obtuse. Lip trilobed; side lobes diverging, linear from a broader base, obtuse; front lobe linear, acute; disc with a median elevated keel; spur curved, a

little shorter than the lip, slightly flattened, obtuse. Rostellum minute, compressed.—*Platanthera volkensiana*, Kränzl. in Engl. Pfl. Ost-Afr. C. 151.

Mozamb. Dist. German East Africa: Kilimanjaro; Marangu, 9500 ft., *Volkens*, 1262!

3. **P. petitianus,** *A. Rich. in Ann. Sci. Nat. sér.* 2, xiv. 266. Plant 6–21 in. high, leafy, with several sheaths near the base. Tuber ovoid-oblong, or globose. Leaves ovate or broadly elliptic-oblong, obtuse, apiculate or subacute. Racemes oblong or elongate, $\frac{3}{4}$–$5\frac{1}{2}$ in. long, dense or somewhat lax. Bracts lanceolate, acuminate, $2\frac{1}{2}$–6 lin. long. Pedicels $1\frac{1}{2}$–$2\frac{1}{2}$ lin. long. Sepals ovate-oblong, obtuse, $1\frac{1}{2}$ lin. long. Petals falcate-oblong, obtuse, 1 lin. long. Lip deeply trilobed from a short, broad claw, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. long; lobes linear; side lobes slightly longer than the front lobe, falcate, subacute; spur oblong, $\frac{1}{2}$ lin. long. Column broad, $\frac{1}{2}$ lin. long; anther with very short caudicles. Stigmatic lobes linear, small or minute. Rostellum very short, tooth-like.—A. Rich. Tent. Fl. Abyss. ii. 288, t. 84; Reichb. f. in Walp. Ann. iii. 583. *Platanthera petitiana*, Engl. Hochgeb. Fl. Trop. Afr. 179. *Habenaria petitiana*, Durand & Schinz, Conspect. Fl. Afr. v. 83.

Nile Land. Abyssinia: Tigre; mountains at Abba Gerima, near Adowa, *Quartin-Dillon* (ex *Richard*), Province of Wodjerat, *Quartin-Dillon & Petit*, 229! Semen; in the middle region descending from Endjedcap towards Shoata, *Schimper*, 1257! without precise locality, *Schimper*, 597! *Parkyns!* Begemeder; Mt. Guna, 9500 ft., *Schimper*, 1317! Debra Tabor, 8500 ft., *Schimper*, 1319! mountain slopes near Galles Claudius (? Gottes Clausius), 7500 ft., *Schimper*, 1275!

4. **P. Preussii,** *Rolfe.* Plant slender, $1\frac{1}{4}$–$1\frac{1}{2}$ ft. high. Leaves 4–6, oblong-lanceolate, acuminate, $1\frac{1}{2}$–3 in. long, 5–10 lin. broad, decreasing into sheaths below and into the bracts above. Spikes 2–$3\frac{1}{2}$ in. long, many-flowered. Bracts lanceolate, acuminate, 3–5 lin. long. Pedicels 3 lin. long. Sepals ovate, obtuse, $1\frac{1}{4}$ lin. long. Petals ovate-oblong, obtuse, $1\frac{1}{4}$ lin. long. Lip trilobed; side lobes falcate-lanceolate, acute, diverging, $1\frac{1}{4}$ lin. long; front lobe very broadly triangular, obtuse, much shorter than the side lobes, with a fleshy median keel; spur oblong, $\frac{1}{2}$ lin. long. Column very broad; anther cells erect, subparallel; caudicles not produced. Stigmas sessile, very small.—*Platanthera Preussii*, Kränzl. in Engl. Jahrb. xvii. 63.

Upper Guinea. Cameroons: West of Buea, 8200 ft., *Preuss*, 967!

5. **P. lefebureanus,** *A. Rich. in Ann. Sci. Nat. sér.* 2, xiv. 266, *t.* 16, *fig.* 3. Plant 3–6 in. high, leafy in the middle, with several sheaths below. Leaves ovate or broadly ovate-oblong, obtuse, subacute or apiculate, $\frac{3}{4}$–$1\frac{1}{2}$ in. long, $\frac{1}{2}$–1 in. broad. Spikes oblong, dense, $\frac{1}{2}$–$1\frac{1}{2}$ in. long. Bracts ovate-lanceolate, subacute, 2–$4\frac{1}{2}$ lin. long. Pedicels 2–3 lin. long. Sepals ovate-oblong, very obtuse, $1\frac{1}{2}$ lin. long. Petals broadly ovate, very obtuse, 1 lin. long. Lip nearly square, with a shortly trilobed apex, 1 lin. long; lobes broadly triangular-ovate, very

obtuse; front lobe with a fleshy disc; spur saccate, $\frac{1}{4}$–$\frac{1}{3}$ lin. long. Column very broad, $\frac{1}{4}$ lin. long, cells slightly diverging with very short caudicles. Stigmas very short, nearly confluent. Rostellum broadly tooth-like, obtuse.—A. Rich. Tent. Fl. Abyss. ii. 288. *Platanthera lefeburiana*, Engl. Hochgeb. Fl. Trop. Afr. 179. *Habenaria lefeburiana*, Durand & Schinz, Conspect. Fl. Afr. v. 80.

Nile Land. Abyssinia: Tigre; Mount Sholoda, near Adowa, *Quartin-Dillon* (ex *Richard*). Wodjerat Distr., *Quartin-Dillon & Petit*, 227! Semen; near Endjedcap, among stones and grass, *Schimper*, 1254! Begemeder; Mount Guna, 10,000 ft., *Schimper*, 1325! without locality, *Schimper*, 613!

6. **P. Steudneri,** *Rolfe.* Plant stout, over 1 ft. high, sheaths spotted with black. Leaves as many as 8, oblong, acute, short, distant, decreasing upwards into the bracts. Racemes cylindrical, compact, with small flowers. Bracts triangular, as long as the flowers. Sepals ligulate-triangular. Petals lanceolate. Lip dilated above the cuneate base, trifid above; side lobes triangular; front lobe with a longitudinal keel; spur subglobose, obscurely bilobed at the apex.—*Herminium Steudneri*, Reichb. f. Otia Bot. Hamb. ii. 109.

Nile Land. Abyssinia: Semen; Ghuba Valley, *Steudner*, 706.

Only known to me from the original description.

34. BRACHYCORYTHIS, Lindl.; Benth. & Hook. f. Gen. Pl. iii. 632.

Sepals free, connivent or ultimately spreading; lateral oblique, often broader than the dorsal. Petals similar to the lateral sepals or a little narrower. Lip continuous with the base of the column, spreading, free; claw broad, somewhat fleshy; base sulcate or concave but not calcarate; apex contracted; limb dilated, tridentate or trilobed. Column short; clinandrium erect. Anther erect or somewhat reclinate, broad; cells parallel; apex inferior, adnate to the short side lobes of the rostellum; pollinia granular; caudicles short; glands large, contiguous; staminodes lateral, small, rounded or auriculate. Stigma pulvinate, fleshy or concave, often large; rostellum short, trilobed; middle lobe erect between the anther cells, somewhat plicate; side lobes short, suberect. Capsule narrowly oblong.—Terrestrial, leafy herbs, with undivided, elongate tubers. Leaves sessile, generally numerous and imbricate, gradually decreasing upwards into the bracts. Spikes or racemes dense or many-flowered. Bracts lanceolate or ovate-lanceolate, often rather large.

A genus of about 10 species, limited to Continental Africa, chiefly differing from *Platanthera* in the absence of a spur to the lip. Bentham refers it to *Diseæ*, where it is clearly out of place.

Plant over 1 ft. high.
- Lip about 1 in. long . . . . . 1. *B. Kalbreyeri.*
- Lip about $\frac{1}{3}$–$\frac{1}{2}$ in. long.
  - Plant densely velvety . . . . . 2. *B. pubescens.*
  - Plant puberulous or nearly glabrous.
    - Lip trilobed.

Leaves about 40, lower 2 in. long . . . 3. *B. Schweinfurthii.*
Leaves about 20, lower $3\frac{1}{4}$ in. long . . 4. *B. Welwitschii.*
Lip bilobed . . . . . 5. *B. pleistophylla.*
Lip about $2\frac{1}{2}$ lin. long . . . . . 6. *B. parviflora.*
Plant under 6 in. high.
Lip 4–5 lin. long . . . . . 7. *B. Pumilio.*
Lip 7–8 lin. long . . . . . 8. *B. Lastii.*

1. **B. Kalbreyeri,** *Reichb. f. in Flora*, 1878, 77. Plant 9–16 in. or more high, with stout, woolly roots. Stem straight or flexuous, densely or distantly leafy, sheathed below. Leaves about 12, ligulate, acuminate, $1\frac{1}{2}$–3 in. long, 4–6 lin. broad, slenderly 13-nerved. Racemes few- to many-flowered; rhachis minutely puberulous. Bracts leafy, longer than the velvety ovaries, oblong-ligulate, acute, 11–13-nerved. Flowers fragrant, violet-purple. Sepals $\frac{3}{4}$ in. long; dorsal elliptical, subacute; lateral oblong-triangular, subacute. Petals elliptical, obtuse-angled, rhomboid, apiculate, broader than the sepals. Lip 1 in. long, angled at the base; limb elliptic-obovate, trifid in front; side lobes broadly triangular or rotundate, obtuse, oblique; front lobe minutely triangular; spur obscurely saccate, minute.—Reichb. f. Otia Bot. Hamb. i. 59.

Upper Guinea. Cameroons: Victoria and Mapanja, 4500–6300 ft., on lava, *Kalbreyer!*

2. **B. pubescens,** *Harv. Thes. Cap.* i. 35, *t.* 54. Plant 1–2 ft. high, velvety all over, densely leafy. Leaves ovate or ovate-lanceolate, acute, or acuminate, $\frac{3}{4}$–$1\frac{1}{4}$ in. long, decreasing into sheaths below and bracts above. Racemes 3–8 in. long, dense-flowered. Bracts lanceolate, acuminate, $\frac{1}{2}$–1 in. long. Flowers white and flesh-coloured. Dorsal sepal elliptic-oblong, obtuse, concave, 3 lin. long; lateral obliquely semiovate-oblong, obtuse, $3\frac{1}{2}$ lin. long. Petals obliquely semiovate-oblong, $2\frac{3}{4}$ lin. long. Lip $3\frac{1}{2}$–4 lin. long, with a pair of rounded auricles at the gibbous or subsaccate base, constricted and bent above the base, cuneately dilated and trilobed above; side lobes rounded, obtuse; front lobe shorter than the side, broadly triangular; disc obtusely carinate, and with a pair of rounded calli between the auricles. Column $1\frac{1}{2}$ lin. long.—Ridl. in Journ. Bot. 1895, 295. *Peristylus hispidulus* and *var. minor*, Rendle in Journ. Linn. Soc. xxx. 398.

Nile Land. British East Africa: North-east of Kariandusi, near the south end of Lake Elmenteita, 7000 ft., in woods, *Gregory!*

Lower Guinea. Angola: Pungo Adongo; Barrancos de Catete, in wet thickets, very rare, *Welwitsch*, 693!

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, near Blantyre, *Last!* Mlange, *Scott-Elliot*, 8687! and without precise locality, *Buchanan*, 512! 572!

Also found in the Transvaal and Natal.

3. **B. Schweinfurthii,** *Reichb. f. Otia Bot. Hamb.* i. 59. Plant tall, $2\frac{1}{2}$–$2\frac{3}{4}$ ft. high. Leaves about 40, cuneate-ligulate, acute, 5-nerved, lower 3–$3\frac{1}{4}$ in. long, 7–8 lin. broad; nerves prominent below. Inflorescence 6 in. long, dense-flowered; apex comose. Bracts linear-lanceolate, acuminate, 3-nerved, most of them as long as the flowers,

the lower longer. Flowers purple. Dorsal sepal elliptical, apiculate; lateral semiovate, axe-shaped, acute, curved. Petals oblong, obtuse, incurved, obtuse-angled at the base. Lip cuneate-ligulate, dilated from a narrow base, trifid at the apex; side lobes semilunate, obtuse; front lobe minute, triangular; spur obtuse-angled. Column as in the allied species.

Nile Land. British East Africa: Niamniam, on Steppes, *Schweinfurth*, 3577. Only known to me from the original description.

4. **B. Welwitschii,** *Reichb. f. in Flora*, 1867, 99. Plant erect, $1\frac{1}{2}$ ft. high, densely leafy. Tuber simple or digitate. Leaves ovate-lanceolate, acuminate, $1\frac{1}{4}$–2 in. long, decreasing upwards into the bracts. Racemes elongated; rhachis papillose, 6–7 in. long, many-flowered. Bracts ovate-lanceolate, acuminate, longer than the flowers, 5–13 lin. long. Flowers white with a brownish-red lip. Dorsal sepal ovate, obtuse, $2\frac{3}{4}$ lin. long; lateral semiovate-oblong, subobtuse. Petals semiovate-oblong, obtuse, auriculate at the base on the outer side. Lip $6\frac{1}{2}$ lin. long, constricted above the cymbiform or subsaccate base; limb obovate, trilobed at the apex; side lobes triangular-oblong, obtuse, crenulate on the outer margin; front lobe triangular, obtuse; disc carinate. Column stout, $1\frac{3}{4}$ lin. long.

Lower Guinea. Angola: Huilla, Sobato de Humpata, about 4500 ft., in wet meadows, *Welwitsch*, 707!

5. **B. pleistophylla,** *Reichb. f. Otia Bot. Hamb.* ii. 104. Plant $1\frac{1}{4}$–$2\frac{1}{4}$ ft. high, strict, densely leafy, turning black in drying. Leaves oblong-lanceolate or ovate-lanceolate, very acuminate or aristate-acuminate, 1–2 in. long, decreasing into sheaths below and bracts above. Racemes elongate, 4–8 in. long, dense, many-flowered. Bracts lanceolate or oblong-lanceolate, acuminate, 6–9 lin. long. Pedicels 4–6 lin. long. Dorsal sepal ovate, subacute, 3 lin. long; lateral semiovate, acute, 3 lin. long. Petals broadly ovate, obtuse or truncate, $3\frac{1}{2}$ lin. long. Lip 6 lin. long, elliptic-obovate from a narrow, slightly gibbous base, bilobed above; lobes oblong, obtuse, sometimes with a minute tooth in the sinus; disc carinate, with a pair of erect linear calli near the base. Column stout, $\frac{3}{4}$ lin. long.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, near Blantyre, *Last!* Mt. Sotchi, *Scott-Elliot*, 8570! Mlanje, *Whyte!* 7000 ft., *McClounie!* and without precise locality, *Buchanan*, 1345! Portuguese East Africa: Morambala Mountain, near Shire River, 3000 ft., *Kirk!*

6. **B. parviflora,** *Rolfe.* Plant about 16 in. high, leafy. Leaves ovate-lanceolate, acuminate, $\frac{3}{4}$–$1\frac{1}{4}$ in. long, decreasing into sheaths below and bracts above. Racemes $3\frac{1}{4}$ in. long, dense-flowered. Bracts lanceolate, acuminate, 5–6 lin. long. Pedicels 4 lin. long. Dorsal sepal elliptic-lanceolate, subacute, 2 lin. long; lateral elliptic-oblong, obtuse, 2 lin. long. Petals obovate-oblong, obtuse, $2\frac{1}{4}$ lin. long. Lip $2\frac{1}{2}$ lin. long, constricted above the cymbiform base, then broadly dilated, shortly trilobed at the apex; side lobes rounded; front lobe

broadly triangular, the middle nerve thickened, with an erect tubercle in front of the sac; sides of the sac broadly triangular-auriculate. Column stout, $\frac{3}{4}$ lin. long.

Mozamb. Dist. British Central Africa: Fwambo, South of Lake Tanganyika, about 5200 ft., *Nutt !*

7. **B. Pumilio,** *Reichb. f. in Flora*, 1882, 531. Plant 2–2½ in. high; apex 1–2-flowered. Leaves 3–4, cauline, sheath-like, imbricate, oblong-lanceolate, acute, 5–7 lin. long. Bracts ovate-lanceolate, acute, sheathing, 6–8 lin. long. Pedicels 7–9 lin. long. Dorsal sepal ovate-oblong, apiculate, 3½–4 lin. long; lateral spreading, oblong, minutely apiculate, suboblique at the base, 5–6 lin. long. Petals oblong, obtuse, 2½–3 lin. long. Lip broadly cuneate-obovate, shortly trilobed at the apex, 4–5 lin. long; lobes triangular, subobtuse, with the base broadly subsaccate, and a pair of erect tubercles or lamellæ in front of the sac. Column stout, 3 lin. long. Stigma a large central cushion, 1 lin. diam., filling the cavity formed by the union of the sac of the lip with the base of the column; rostellum ovate, obscurely tridentate above, 1 lin. long.—*Penthea Pumilio*, Lindl. in Journ. Linn. Soc. vi. 138. *Disa Pumilio*, Durand & Schinz, Conspect. Fl. Afr. v. 105 ("Papilio," by error).

Upper Guinea. Sierra Leone: River Bagru, *Mann*, 904!
Lower Guinea. Angola: Malange, *Mechow*, 368 (ex *Reichenbach*).

8. **B. Lastii,** *Rolfe*. Plant about 3 in. high; apex 2–4-flowered. Tuber oblong, 5–6 lin. long. Leaves cauline, sheath-like, closely imbricate, ovate-oblong, acute, 8–12 lin. long. Bracts exactly like the sheaths. Pedicels about 1 in. long. Dorsal sepal ovate, obtuse, ½ in. long; lateral ovate-oblong, obtuse, spreading, oblique at the base, 7 lin. long. Petals ovate, obtuse, 4 lin. long. Lip cuneate-obovate, with somewhat deflexed sides, 7–8 lin. long; apex trilobed; lobes oblong, obtuse; front lobe rather fleshy, conduplicate or reflexed at the sides, saccate at the base. Column stout, 2½–3 lin. long.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, near Blantyre, *Last !*

Near *B. Pumilio*, Reichb. f., but the flowers are considerably larger.

35. PLATANTHERA, Rich.; Lindl. Gen. & Sp. Orch. 284.

Sepals unequal, free; lateral more or less spreading or reflexed. Petals simple, usually narrower than the dorsal sepal, and appressed to it, forming a galea. Lip continuous with the column, sometimes shortly adnate to it, produced at the base into a short or much elongated spur; limb spreading or pendulous, narrow or broad, entire or trilobed; side lobes sometimes fimbriate or pectinate. Column short, footless; clinandrium erect, short or scarcely as long as the anther. Anther cells parallel or diverging; apex inferior, short and adnate to the side lobes of the rostellum; pollinia granular, with short caudicles, and exserted, naked glands; staminodes lateral, small, rounded or auriculate. Stigmas sessile or subsessile, more or less confluent, often pulvinate; rostellum

trilobed; middle lobe subulate or tooth-like, situated between the anther cells; side lobes short. Capsule ellipsoid or oblong.—Terrestrial herbs with the habit of *Orchis*. Tubers ovoid-globose or rarely lobed. Flowers small or large, in lax or dense spikes or racemes. Bracts mostly narrow.

A genus of 60 or 70 species, dispersed through the north temperate regions, and in the tropics of Asia and Africa, chiefly in the mountains.

Distinguished from *Habenaria* by the short, more or less confluent stigmas.

Spur straight or slightly curved.
- Spikes lax . . . . . 1. *P. helleborina.*
- Spikes dense.
  - Lip cuneate-dilated, trilobed . . . . 2. *P. engleriana.*
  - Lip ovate-oblong, entire . . . . . 3. *P. tenuior.*

Spur hooked, constricted in the middle, subglobose at the apex . . . . . 4. *P. uncata.*

1. **P. helleborina,** *Rolfe.* Plant 1–1¼ ft. high, leafy. Leaves lanceolate-oblong, acute or subacute, 2–4 in. long, ½–1½ in. broad, decreasing upwards into the bracts. Bracts ovate-lanceolate, acute, ¾–1½ in. long. Pedicels 5–6 lin. long. Flowers green, with a lilac spotted lip. Dorsal sepal oblong-lanceolate, subobtuse, subgaleate, 5 lin. long; lateral spreading, reflexed, falcate-oblong, subobtuse, 5 lin. long. Petals falcate-oblong, obtuse, appressed to the dorsal sepal forming a hood, 5 lin. long. Lip 10–11 lin. long, shortly clawed, then much dilated, suborbicular or obovate-orbicular, emarginate or shortly bilobed, 8 lin. broad; disc with a pair of keel-like lamellæ at the base; spur conical, narrowed near the apex, subobtuse, 4 lin. long. Anther oblong, 1½ lin. long, with short caudicles. Stigmas very short, nearly confluent. Rostellum tooth-like, minute. Capsule oblong, 7–8 lin. long.—*Habenaria helleborina*, Nichols. Dict. Gard. ii. 107. *Gymnadenia macrantha*, Lindl. Gen. & Sp. Orch. 279; Kränzl. in Reichb. f. Xen. Orch. iii. 71, t. 236; var. *punctulata*, Kränzl. l.c. t. 237, fig. 2. *Eulophia helleborina*, Hook. f. in Bot. Mag. t. 5875.

Upper Guinea. Sierra Leone: *Turner! Bockstatt! Hart!* shady places on the way up Sugarloaf Mountain, *Scott-Elliot*, 4061!

2. **P. engleriana,** *Rolfe.* Stem very long, over 3 ft. high, slender, the lower 10 inches clothed with distant sheaths, the upper part leafy. Leaves about 20, lanceolate, acuminate, distant, decreasing into the bracts above. Bracts leaf-like, but smaller than the leaves, the lower longer than the flowers, the upper equalling them. Spikes dense, many-flowered, glabrous, continuous with the upper leaves. Sepals ovate, obtuse; lateral a little oblique at the base. Petals ovate, obtuse, more slender than the sepals. Lip with a narrow base, suddenly dilated into a trilobed limb; side lobes triangular; front lobe elongate-linear, obtuse; disc with 2 straight elevated calli between the side lobes, connected by a very narrow isthmus; spur long, stout, cylindrical, slightly curved, obtuse, as long as the lip. Column tall,

half as long as the dorsal sepal. Rostellum transverse, thick.—*Brachycorythis engleriana*, Kränzl. in Engl. Jahrb. xxii. 20.

Upper Guinea. Cameroons: Yaunde, *Zenker*, 563.

Only known to me from the original description.

3. **P. tenuior,** *Rolfe.* Plant 6–15 in. high, leafy. Leaves ovate or ovate-lanceolate, acute or acuminate, $\frac{3}{4}$–$1\frac{1}{2}$ in. long, decreasing into sheaths below and into the bracts above. Racemes 1–$4\frac{1}{2}$ in. long, many-flowered. Bracts lanceolate or ovate-lanceolate, acute or acuminate, 4–12 lin. long. Pedicels 3–4 lin. long. Flowers purple. Dorsal sepal elliptic-oblong, obtuse, concave, 3 lin. long; lateral obliquely semiovate-oblong, $3\frac{1}{2}$ lin. long. Petals obliquely oblong, obtuse, 3 lin. long, the lower side with a rounded base. Lip entire, 3–$3\frac{1}{2}$ lin. long, oblong, obtuse, with reflexed sides and rounded basal auricles; disc with a fleshy central nerve and a pair of narrow erect lamellæ at the base; spur $3\frac{1}{2}$ lin. long, conical-oblong, obtuse. Column stout, 2 lin. long.—*Brachycorythis tenuior*, Reichb. f. in Flora, 1865, 183; Reichb. f. Otia Bot. Hamb. ii. 104. *Habenaria tenuior*, N. E. Brown, in Gard. Chron. 1885, xxiv. 307.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, Blantyre, *Scott!* Fwambo, South of Lake Tanganyika, *Carson*, 11!

Also found in the Transvaal and in Natal.

4. **P. uncata,** *Rolfe.* Plant 6–7 in. high, 2-leaved. Leaves subradical, elliptic-oblong, subacute or apiculate, 2–$2\frac{1}{2}$ in. long, $\frac{3}{4}$–$1\frac{1}{4}$ in. broad. Racemes $2\frac{1}{2}$ in. long, lax. Bracts ovate, acuminate, 3–4 lin. long. Pedicels 3–5 lin. long. Flowers purple. Dorsal sepal ovate, acute, 2 lin. long; lateral obliquely ovate, acute, 2 lin. long. Petals suborbicular-ovate, acute, slightly shorter than the sepals. Lip obovately trilobed from a cuneate base, 4–$4\frac{1}{2}$ lin. long; side lobes broadly oblong, obtuse; front lobe triangular, acute, not half as long as the side lobes; spur broadly conical, inflated at the base, much constricted and curved in the middle, subglobosely inflated at the apex. Column stout, 1 lin. long. Stigma subsessile. Rostellum triangular, short.

Mozamb. Dist. German East Africa: Kwa Chiropa, *Hannington!*

36. **PODANDRIA,** *Rolfe.*

Sepals free; lateral narrower than the dorsal, reflexed. Petals simple, filiform-setaceous, erect, longer than the dorsal sepal and free from it. Lip continuous with the column, shortly adnate to it, produced at the base into a long cylindrical spur; limb pendulous, tripartite with narrow lobes. Column with a short broad base, footless. Anther long stipitate; cells parallel; apex inferior, free from the side lobes of the rostellum, and exterior to them; pollinia granular, with very long slender caudicles, and exserted naked gland; staminodes lateral, oblong. Stigmas sessile, nearly confluent, situated within the side lobes of the rostellum and at their base; rostellum trilobed; front

lobe linear-subulate, with incurved apex; side lobes short and broad, with bidentate apex.

A West African monotype, somewhat resembling *Habenaria* in habit, but remarkable for its enormously elongated anther and long narrow segments. The stigma resembles *Platanthera*, but is guarded on either side by the enlarged side lobes of the rostellum, which are free from the anther channels.

1. **P. macrandra,** *Rolfe.* Plant $\frac{3}{4}$–$1\frac{3}{4}$ ft. high. Leaves 4–7, radical, petioled; blade elliptic-oblong, acute, 2–5 in. long, $\frac{3}{4}$–$2\frac{1}{4}$ in. broad; petioles 1–2 in. long. Racemes with 2–9 large flowers. Bracts ovate-lanceolate, acuminate, 1–$1\frac{1}{4}$ in. long. Pedicels 1–$1\frac{1}{4}$ in. long. Dorsal sepal linear-lanceolate, subacuminate, 14 lin. long; lateral linear, acuminate, 15 lin. long. Petals simple, filiform-setaceous, acuminate, $1\frac{1}{2}$ in. long. Lip tripartite; lobes linear-filiform, 7–8 lin. long, subequal or the front lobe slightly longer than the side; spur $2\frac{1}{2}$–3 in. long, slender below, slightly thickened above. Stigmas sessile, nearly confluent. Anther cells 2 lin. long, situated at the apex of a narrow stipes, 7–8 lin. long, free from the side lobes of the rostellum at the base; staminodes oblong, erect, $\frac{3}{4}$ lin. long. Rostellum trilobed; side lobes broadly oblong, bidentate, 1 lin. long; front lobe linear-subulate, curved at the apex, $1\frac{1}{2}$ lin. long.—*Habenaria macrandra*, Lindl. in Journ. Linn. Soc. vi. 139; Reichb. f. in Flora, 1865, 179; Kränzl. in Engl. Jahrb. xvi. 161.

Upper Guinea. Niger Delta: banks of the Bonny River, *Mann*, 518! Cameroon Mountains, 3000 ft., *Mann*, 2117!

Lower Guinea. Angola: Golungo Alto, Mount Queta, in very shady primæval woods, *Welwitsch*, 663!

Reichenbach wrongly describes the petals as bipartite.

37. **HABENARIA,** Willd.; Benth. & Hook. f. Gen. Pl. iii. 624, in part.

Sepals unequal, free; lateral more or less spreading or reflexed. Petals simple or deeply bilobed, usually narrower than the dorsal sepal, and appressed to it, forming a galea, or the posticous lobe so appressed, and the anticous descending, and simulating a lobe of the lip. Lip continuous with the column, often shortly adnate to it, produced at the base into a short or much elongated spur; limb spreading or pendulous, narrow or broad, undivided or trilobed; side lobes sometimes fimbriate or pectinate. Column short, footless; clinandrium erect, short or scarcely as long as the anther. Anther cells parallel or diverging; apex inferior, short and adnate or free, elongate, and horizontal, or descending in slender channels on the margins of the side lobes of the rostellum; pollinia granular, with short or elongate caudicles, and exserted, naked gland; staminodes lateral, small, rounded or auriculate. Stigma bilobed, or extended into two short or elongate, often clavate, papillose processes; rostellum trilobed; middle lobe subulate or tooth-like, situated between the anther-cells; side lobes much longer, and acting as carriers for the caudicles of the pollinia. Capsule ellipsoid or oblong, sometimes

beaked.—Terrestrial herbs, with the habit of *Orchis*. Tubers ovoid-globose or rarely lobed. Flowers small or large, in lax or dense spikes or racemes. Bracts mostly narrow.

A genus of about 400 species, widely diffused through tropical and subtropical regions.

I have followed Kränzlin and most other authors in retaining *Platanthera*, which is sometimes referred here, as a distinct genus, on account of the sessile or subsessile, more or less confluent stigmas.

Petals entire.

Lip entire.

Pedicels $2\frac{1}{2}$ lin. long; flowers $1\frac{1}{2}$ lin. long, rose . 1. *H. calcarata.*

Pedicels 6–10 lin. long; flowers $2\frac{1}{2}$–4 lin. long, green or white.

Spur entire at the apex.

Sepals $2\frac{1}{2}$–3 lin. long . . . . . 2. *H. zambesina.*

Sepals 4–5 lin. long . . . . . 3. *H. stenochila.*

Spur shortly bifid at the apex . . . . 4. *H. leonensis.*

Lip trilobed or tripartite (side lobes rarely very small).

Side lobes of lip entire.

*Leaves cauline, more or less elongated or narrow

Spur shorter than the lip.

Lip trilobed.

Leaves 2–7 lin. broad.

Sepals 1 lin. long.

Leaves ovate-oblong, $\frac{3}{4}$–$1\frac{1}{4}$ in. long 5. *H. Montolivæa.*

Leaves lanceolate-oblong, 3–$3\frac{1}{2}$ in. long . . . . . 6. *H. debilis.*

Sepals $2\frac{1}{4}$ lin. long . . . . 7. *H. Rendlei.*

Leaves $\frac{3}{4}$–$1\frac{1}{4}$ in. broad . . . 8. *H. microceras.*

Lip tripartite.

Raceme short, dense . . . . 9. *H. combusta.*

Raceme elongate, lax . . . . 10. *H. peristyloides.*

Spur as long as the lip . . . . 11. *H. cardiochila.*

Spur longer, but not more than twice as long as the lip.

Spur cylindrical, $2\frac{1}{2}$ lin. long . . . 12. *H. tenuispica.*

Spur clavate, 4 lin. long . . . 13. *H. Erythræa.*

Spur slender, $\frac{1}{2}$–1 in. long.

Leaves linear or oblong-linear.

Inflorescence dense. . . . . 14. *H. clarencensis.*

Inflorescence lax.

Leaves oblong-linear.

Front lobe of lip slightly longer than the side lobes.

Lobes of lip 1–$1\frac{1}{2}$ lin. long . 15. *H. attenuata.*

Lobes of lip 2–$2\frac{1}{2}$ lin. long . 16. *H. Spiranthes.*

Front lobe of lip twice as long as the side lobes . . . 17. *H. filicornis.*

Leaves linear . . . . . 18. *H. chlorotica.*

Leaves lanceolate to oblong.

Abyssinian species.

Racemes dense.

Flowers 1–3 lin. diameter . . 19. *H. variabilis.*

Flowers 4–5 lin. diameter . . 20. *H. bracteosa.*

Racemes lax.
Lobes of lip oval-lanceolate . . 21. *H. distantiflora.*
Lobes of lip filiform or narrow.
Front lobe of lip longer than the side lobes . . . 22. *H. deflexa.*
Lobes of lip equal . . . 23. *H. tridactyla.*
Western species.
Side lobes of lip 1¼ lin. long . . . 24. *H. Schinzii.*
Side lobes of lip reduced to minute teeth 25. *H. epipactidea.*
Spur slender or subclavate, 1½–4 in. long.
Racemes many-flowered.
Side lobes of lip linear, 5–7 lin. long . 26. *H. procera.*
Side lobes of lip minute and tooth-like 27. *H. hircina.*
Racemes few-flowered.
Leaves radical or subradical.
Lobes of lip 5–6 lin. long . . 28. *H. gabonensis.*
Lobes of lip about 1 in. long . . 29. *H. eburnea.*
Leaves cauline.
Sepals ovate or obovate, obtuse . 30. *H. Staudtii.*
Sepals oblong-lanceolate, acute . 31. *H. Milnei.*
Spur elongate, 6–6½ in. long . . . 32. *H. Psiloceras.*
**Leaves radical, suborbicular . . . 33. *H. vaginata.*
Side lobes of lip fimbriate or pectinate.
Spur 4½–6 in. long. . . . . 34. *H. engleriana.*
Spur ½–2 in. long.
Leaves ovate-lanceolate, ovate or ovate-oblong (Abyssinian or Eastern species).
Dorsal sepal 3–5 lin. long.
Sepals subequal . . . . 35. *H. tricruris.*
Lateral sepals somewhat longer than the dorsal.
Side lobes of lip deeply fimbriate at the apex . . . 36. *H. decorata.*
Side lobes of lip pectinate along the outer margin . . 37. *H. quartiniana.*
Lateral sepals much larger than the dorsal . . . . . 38. *H. anisoptera.*
Dorsal sepal 8–12 lin. long.
Spur 1¼–1½ in. long.
Claw of lip 2½ lin. long . . 39. *H. macrantha.*
Claw of lip 5 lin. long . . 40. *H. splendens.*
Spur 10 lin. long . . . . 41. *H. præstans.*
Leaves linear-oblong (Western species) . 42. *H. Mannii.*

Petals bilobed or bipartite.
Leaves suborbicular, radical.
Sepals acute or acuminate.
Leaves two.
Spur clavate, 6 lin. long . . . . 43. *H. calva.*
Spur cylindrical, 1½–2 in. long.
Raceme dense, many-flowered . . . 44. *H. stylites.*
Raceme few, and distant-flowered . . 45. *H. Mechowii.*
Spur cylindrical, 3–5 in. long.
Stigmatic processes 2–2½ lin. long . . 46. *H. subarmata.*
Stigmatic processes 3½–4½ lin. long.

Leaves 4–5 in. broad . . . . 47. *H. armatissima.*
Leaves 7–8 in. broad . . . . 48. *H. Lugardii.*
Leaves solitary.
Spur as long as the ovary . . . . 49. *H. villosa.*
Spur three to four times as long as the ovary . 50. *H. Lecardii.*
Sepals broad and obtuse.
Spur 18–20 lin. long . . . . . 51. *H. æquatorialis.*
Spur 6 in. long . . . . . 52. *H. macrura.*
Leaves more or less elongated or narrow (unknown in 70, 93, 104 and 105).
*Spur under 2 in. long.
Leaves radical, oblong-lanceolate . . . 53. *H. thomana.*
Leaves cauline, or if subradical very narrow.
Leaves broad, usually oblong or ovate-oblong.
Anterior petal lobe longer than the posterior
Flowers glabrous.
Spur slender, slightly curved . . 54. *H. malacophylla.*
Spur curved forwards, then deflexed . 55. *H. tentaculigera.*
Spur inflated throughout . . . 56. *H. njamnjamica.*
Spur clavate from a narrow base . . 57. *H. ceratopetala.*
Flowers more or less puberulous.
Spur $4\frac{1}{2}$ lin. long . . . . 58. *H. antennifera.*
Spur 7–8 lin. long.
Anterior petal lobe distinctly narrowed from an ovate base . . . 59. *H. cultrata.*
Anterior petal lobe suddenly caudate from a rounded base . . 60. *H. cultriformis.*
Anterior petal lobe equalling or shorter than the posterior.
Lip entire . . . . . 61. *H. robusta.*
Lip trilobed or tripartite.
Anterior petal lobe entire.
Spur not or but slightly thickened at the apex . . . . 62. *H. Bongensium.*
Spur inflated at the apex.
Lobes of lip linear . . . 63. *H. ruwenzoriensis.*
Lobes of lip broadly subspathulate 64. *H. insignis.*
Anterior petal lobe minutely bilobed . 65. *H. simensis.*
Anterior petal lobe reduced to a pair of minute teeth . . . . 66. *H. pantothrix.*
Leaves narrow, usually lanceolate or linear (unknown in 70 and 93).
†Stigmatic processes under 2 lin. long.
Racemes short, usually under 4 in. long.
Western species.
Lip somewhat curved . . . 67. *H. Welwitschii.*
Lip uncinate . . . . . 68. *H. anaphysema.*
Eastern species.
Lateral sepals 4 lin. long . . 69. *H. humilior.*
Lateral sepals 3 lin. or less long.
Spur subclavate.
Spur 6–7 lin. long . . . 70. *H. martialis.*
Spur 10–11 lin. long . . 71. *H. ingrata.*
Spur strongly clavate . . . 72. *H. oulicifera.*

Racemes elongated, usually over 4 in. long.
Western species.
Leaves 1½ lin. broad . . . . 73. *H. buettneriana.*
Leaves 2–4 lin. broad . . . . 74. *H. cataphysema.*
Eastern species.
Spur clavate . . . . . 75. *H. Peltastes.*
Spur subclavate or filiform.
Abyssinian species . . . . 76. *H. chirensis.*
Species found south of Abyssinia.
Spur 5 lin. long.
Spur filiform . . . 77. *H. Holstii.*
Spur narrowly fusiform . . 78. *H. polyantha.*
Spur 7–10 lin. long.
Anterior petal lobe longer than the posterior.
Raceme 6 in. long . . 79. *H. ndiana.*
Raceme about 1 ft. long . 80. *H. sochensis.*
Anterior petal lobe shorter than the posterior . . . 81. *H. Kilimanjari.*
††Stigmatic processes 2 lin. or more long.
Spur 1 in. long or less.
Western species.
Anterior petal lobe much longer than the posterior.
Spur 10–11 lin. long . . . 82. *H. huillensis.*
Spur 4–6 lin. long.
Spur subclavate . . . 83. *H. ichneumonea.*
Spur strongly clavate . . . 84. *H. confusa.*
Anterior petal lobe slightly shorter than the posterior . . . . 85. *H. Vogelii.*
Eastern species.
Spur 4–7 lin. long.
Side lobes of lip well developed.
Racemes lax.
Abyssinian species . . 86. *H. schimperiana.*
Ruwenzori species . . 87. *H. genuflexa.*
Racemes dense.
Spur 5 lin. long . . . 88. *H. Thomsoni.*
Spur 9 lin. long . . . 89. *H. lykipiensis.*
Side lobes of lip reduced to minute teeth . . . . . 90. *H. ridleyana.*
Spur 8–12 lin. long.
Lobes of lip 4–5 lin. long.
Stigmatic processes slender, capitate . . . . 91. *H. hochstetteriana.*
Stigmatic processes clavate, obliquely truncate.
Stigmatic processes 2 lin. long 92. *H. pedicellaris.*
Stigmatic processes 3 lin. long 93. *H. ranicolorata.*
Lobes of lip 6–7 lin. long.
Raceme lax . . . . 94. *H. nyikana.*
Raceme dense . . . 95. *H. altior.*
Spur much over 1 in. long.
Raceme lax . . . . . 96. *H. plectromaniaca.*
Raceme dense . . . . . 97. *H. decaptera.*

**Spur 3–8 in. long.
Western species.
Plant $1\frac{1}{2}$–$2\frac{1}{4}$ ft. high.
Flowers $\frac{3}{4}$ in. long . . . . 98. *H. occultans.*
Flowers $1\frac{1}{2}$ in. long . . . . 99. *H. Soyauxii.*
Plant 4 ft. or more high . . . 100. *H. zenkeriana.*
Eastern species.
Spur as long as the pedicel, its apex generally concealed within the bract 101. *H. Walleri.*
Spur much longer than the pedicel, free from the bract.
Lobes of lip subequal.
Petal lobes subequal . . . 102. *H. perbella.*
Anterior petal lobe twice as long as the posterior.
Spur cylindrical, 5–8 in. long . 103. *H. cirrhata.*
Spur clavate above, $3\frac{1}{2}$ in. long . 104. *H. longistigma.*
Side lobes of lip twice as long as the front lobe.
Spur cylindrical, 5 in. long . . 105. *H. rhopalostigma.*
Spur clavate above, 3 in. long . . 106. *H. Holubii.*
***Spur absent . . . . . 107. *H. ecaudata.*

1. **H. calcarata,** *Benth. in Journ. Linn. Soc.* xviii. 355. Plant slender, over 1 ft. high. Leaves 3–4, basal, oblong-lanceolate, acute or apiculate, 1–$1\frac{1}{2}$ in. long, 4–6 lin. broad. Upper part of the stem and the inflorescence glandular-pilose. Bracts lanceolate, acuminate, $2\frac{1}{2}$–$3\frac{1}{2}$ lin. long. Pedicels glandular-pubescent, $2\frac{1}{2}$ lin. long. Flowers deep rose. Dorsal sepal ovate, acute, $1\frac{1}{2}$ lin. long; lateral ligulate, acute, $1\frac{1}{2}$ lin. long; all muriculate-puberulous outside. Petals rhomboid-ligulate, acute, $1\frac{1}{2}$ lin. long. Lip ligulate, acute; spur cylindrical, $1\frac{1}{4}$ lin. long, slightly thickened above the base. Column very short. Stigmatic processes linear-oblong, short. Anther channels minute. Rostellum reduced to a very small tooth.—Benth. & Hook. f. Gen. Pl. iii. 627. *Stenoglottis calcarata,* Reichb. f. in Flora, 1865, 180. *Barlæa calcarata,* Reichb. f. in Linnæa, xli. 54.

Lower Guinea. Angola: near Huilla, *Welwitsch,* 733! not 233 as quoted by Reichenbach.

Reichenbach at first referred this to *Stenoglottis,* and afterwards made a new genus, *Barlæa,* for its reception. Bentham classified it as an anomalous *Habenaria,* but its exact affinity still remains doubtful.

2. **H. zambesina,** *Reichb. f. Otia Bot. Hamb.* ii. 96. Plant stout, over 2 ft. high. Leaves cauline, amplexicaul, oblong or ovate-oblong, subobtuse or apiculate, 2–$4\frac{1}{2}$ in. long, $\frac{3}{4}$–$1\frac{3}{4}$ in. broad, decreasing upwards. Racemes cylindrical, 4–8 in. long, dense-flowered. Bracts lanceolate or ovate-lanceolate, acuminate, 6–10 lin. long. Pedicels 7–8 lin. long. Sepals broadly ovate, apiculate, $2\frac{1}{2}$–3 lin. long. Petals suborbicular-ovate, rather shorter than the sepals. Lip entire, linear-oblong, obtuse or apiculate, 3–$3\frac{1}{2}$ lin. long; spur cylindrical, $1\frac{1}{2}$–2 in. long. Stigmatic processes subclavate-linear, $1\frac{1}{2}$ lin. long. Anther

channels stout, about $\frac{3}{4}$ lin. long. Rostellum oblong, $\frac{1}{2}$ lin. long.—Kränzl. in Engl. Jahrb. xvi. 213.

Lower Guinea. Angola: Quango River, *Mechow*, 535A (ex *Kränzlin*).

Mozamb. Dist. British Central Africa: Zambesiland, *Kirk!* Nyasaland; Shire Highlands, common in marshy places, *Buchanan*, 312! and without precise locality, *Buchanan*, 472! 542!

3. **H. stenochila,** *Lindl. in Journ. Linn. Soc.* vi. 139. Plant 1–2 ft. high. Stem leafy. Leaves oblong or elliptic-oblong, acute or shortly acuminate, 2–4$\frac{1}{2}$ in. long, $\frac{3}{4}$–1$\frac{3}{4}$ in. broad. Racemes 1$\frac{1}{2}$–3$\frac{1}{2}$ in. long, dense-flowered. Bracts lanceolate or ovate-lanceolate, acuminate, $\frac{1}{2}$–1 in. long. Pedicels 6–10 lin. long. Flowers white, very fragrant. Dorsal sepal ovate-lanceolate, subobtuse, 4 lin. long; lateral obliquely semiovate, subacute, 4$\frac{1}{2}$–5 lin. long. Petals suboblique, ovate-oblong, with a rounded basal angle in front, subobtuse, 4 lin. long. Lip simple, elongate-linear, obtuse, 5$\frac{1}{2}$ lin. long; spur cylindrical, slightly curved, 1–1$\frac{1}{2}$ in. long. Stigmatic processes subclavate-linear, subacute, slightly curved, 1$\frac{1}{2}$ lin. long. Anther channels linear, curved, 2 lin. long. Rostellum subulate, $\frac{1}{2}$ lin. long.—Kränzl. in Engl. Jahrb. xvi. 216.

Lower Guinea. Princes Island, *Barter*, 1995!

4. **H. leonensis,** *Kränzl. ex Durand & Schinz, Conspect. Fl. Afr.* v. 80. Stem 10 in. high, leafy above, squamate below. Leaves long sheathing, oblong or ovate-lanceolate, acuminate, 3$\frac{1}{4}$–4$\frac{3}{4}$ in. long, $\frac{3}{4}$–1$\frac{1}{4}$ in. broad. Racemes short, 3–5-flowered. Bracts ovate-lanceolate, acute or acuminate, 3–6 lin. long. Pedicels 7–8 lin. long. Flowers white. Dorsal sepal broadly oblong, obtuse, 4 lin. long; lateral obliquely oblong, subobtuse or apiculate, 4$\frac{1}{2}$ lin. long. Petals elliptic-oblong, obtuse, 3$\frac{1}{2}$ lin. long. Lip linear from a broader, rectangular base, 6 lin. long; spur cylindrical, curved, 1$\frac{1}{4}$–1$\frac{1}{2}$ in. long; apex distinctly bifid. Stigmatic processes linear, curved, 1 lin. long. Anther channels about as long as the stigmas. Rostellum triangular, subacute, about $\frac{1}{2}$ lin. long.—*H. candida*, Lindl. ex Kränzl. in Engl. Jahrb. xvi. 217 (not Dalzell).

Upper Guinea. Sierra Leone; cultivated specimen, *Loddiges!* Sugarloaf Mountain, *Preuss* (ex *Kränzlin*).

The name *H. leonensis*, is not given by Kränzlin in his Monograph, but as Durand & Schinz omit *H. candida*, Lindl., I have no doubt that this is what they intended, especially as the page cited agrees.

5. **H. Montolivœa,** *Kränzl. ex Engl. Hochgeb. Fl. Trop. Afr.* 183. Tuber roundish-oblong, 6–7 lin. long. Stem 6–12 in. high, 4–5-leaved. Leaves ovate-oblong, subobtuse or apiculate, $\frac{3}{4}$–1$\frac{1}{4}$ in. long, 5–7 lin. broad, the upper gradually passing over into the bracts. Racemes 1$\frac{1}{2}$–2$\frac{1}{2}$ in. long, rather dense, many-flowered. Bracts ovate or ovate-lanceolate, acute, 1$\frac{1}{2}$–2$\frac{1}{2}$ lin. long. Pedicels 1$\frac{1}{2}$–2 lin. long. Sepals ovate, acute or apiculate, 1 lin. long. Petals ovate-oblong, subobtuse, 1 lin. long. Lip 1 lin. long, shortly trilobed from a broad base; side lobes falcate-oblong, subobtuse; front lobe triangular, obtuse,

slightly longer and broader than the side lobes; disc fleshy and with a short broad tooth in front of the spur; spur oblong-globose, ½ lin. long, Stigmatic processes sessile, rounded. Anther channels nearly obsolete; glands large, subglobose. Rostellum broadly oblong, obtuse, ½ lin. long, with the minute stigmatic lobes at its base.—Kränzl. in Engl. Jahrb. xvi. 176. *Montolivœa elegans*, Reichb. f. Otia Bot. Hamb. ii. 107; Benth. et Hook. f. Gen. Pl. iii. 627.

Nile Land. Abyssinia: Begemeder; Debra Tabor, 8500 ft., Tigre v. Begemeder, *Schimper*, 1268! 1321! Semen; on the road from Debra Ercis to Woina, 7000–8000 ft., *Schimper*, 625!

Remarkable for the large rostellum with minute stigmas at the base, also for the large glands. Habit of *Herminium*, but the stigma is different, and it seems to have no near affinities.

6. **H. debilis,** *Hook. f. in Journ. Linn. Soc.* vii. 221. Plant 3½–8 in. high. Leaves 2, subradical, lanceolate-oblong, acute, attenuate at the base, 3–3½ in. long, 4–7 lin. broad; sheaths about two, small. Scapes pubescent above. Racemes ¾–2 in. long, few- to many-flowered. Bracts lanceolate, acuminate, 2 lin. long. Pedicels 3 lin. long, pubescent. Dorsal sepal broadly ovate, obtuse, 1 lin. long; lateral obliquely ovate, obtuse, 1 lin. long. Petals ovate, obtuse, rather smaller than the sepals. Lip a little exceeding the sepals, trilobed; lobes linear-oblong, obtuse; front lobe a little longer than the side lobes; spur 1 lin. long, a little narrowed at the apex. Stigmatic processes curved, ascending, very short. Anther channel scarcely exserted. Rostellum minute.—Kränzl. in Engl. Jahrb. xvi. 158.

Upper Guinea. Cameroons, 5000–7000 ft., *Mann*, 2127!

7. **H. Rendlei,** *Rolfe.* Stem 9–12 in. high, 3–4-leaved in the middle. Leaves linear or linear-lanceolate, acute, 1½–4 in. long, 1½–3 lin. broad. Spikes 2–4½ in. long, narrow, many-flowered. Bracts ovate-lanceolate, acuminate, 4–6 in. long. Pedicels 2 lin. long. Dorsal sepal ovate-oblong, obtuse, 2¼ lin. long; lateral erect, oblique, semicordate-ovate, subacute or apiculate, 2¾ lin. long. Petals ovate-oblong, obtuse, 2¼ lin. long. Lip 3 lin. long, shortly and broadly unguiculate, then trilobed; each side of the claw shortly cordate-auriculate; lobes fleshy, linear, subacute; side lobes diverging; front lobe broader and about twice as long as the side lobes; spur broadly oblong, 1 lin. long. Stigmatic processes deflexed, oblong, parallel, ½ lin. long. Anther channels scarcely developed. Rostellum broadly obovate, quadrate, truncate, ⅓ lin. long, and more than that broad.—*H. peristyloides*, Rendle in Journ. Bot. 1895, 294 (not A. Rich.).

Nile Land. British East Africa: Ruwenzori, sunny hillsides, 6000–7000 ft., *Scott-Elliot*, 7646!

This has much narrower leaves than the Abyssinian *H. peristyloides*, A. Rich., to which it has been referred.

8. **H. microceras,** *Hook. f. in Journ. Linn. Soc.* vii. 221. Plant 1–2½ ft. high. Leaves cauline, elliptical, subacute, 1½–4 in. long, ¾–1½ in. broad. Racemes 4–10 in. long, rather dense, many-flowered. Bracts

oblong-lanceolate, acute, 3–5 lin. long. Pedicels 2–3 lin. long. Flowers green. Sepals ovate-oblong, obtuse, $1\frac{1}{4}$ lin. long. Petals oblong, obtuse, $1\frac{1}{4}$ lin. long. Lip fleshy, trilobed, $1\frac{1}{4}$ lin. long; side lobes oblong, obtuse, a little narrower and longer than the front lobe, slightly incurved; front lobe triangular, distinctly keeled in front; spur linear-oblong, obtuse, slightly curved, $\frac{1}{2}$ lin. long. Stigmatic processes subsessile, rounded, obtuse, diverging. Anther channels very short or scarcely exserted. Rostellum minute and tooth-like.—Kränzl. in Engl. Jahrb. xvi. 142.

Upper Guinea. Cameroons: 7000–10,000 ft., *Mann*, 2116! *Johnston*, 31! 32! *Preuss*, 967.

9. **H. combusta,** *Ridl. in Journ. Bot.* 1886, 294. Tuber ovoid, $\frac{3}{4}$ in. long, $4\frac{1}{2}$ lin. broad. Stem $4\frac{3}{4}$–8 in. high with 1 or 2 short, acute, basal sheaths, and 2 to 4 leaves above. Leaves oblong or linear-oblong, acute, $1\frac{1}{4}$–$3\frac{1}{2}$ in. long, 4–7 lin. broad. Racemes dense-flowered, $1\frac{1}{4}$–2 in. long. Bracts lanceolate, acuminate or aristate-acuminate, 4–8 lin. long. Pedicels $2\frac{1}{2}$–3 lin. long. Dorsal sepal ovate, acute, mucronate, $1\frac{1}{2}$–2 lin. long; lateral oblique, upright, not deflexed, $2\frac{1}{2}$–3 lin. long. Petals ovate-oblong, very obtuse, shorter than the lip, as long as the dorsal sepal. Lip with cordately auricled base, tripartite; side lobes linear-falcate, obtuse, $1\frac{1}{2}$–2 lin. long; front lobe straight, twice as broad and twice as long as the side lobes; spur saccate-oblong, $\frac{1}{2}$–$\frac{3}{4}$ lin. long. Stigmatic process short, rounded, deflexed. Anther channels very short. Rostellum minute, triangular.—Kränzl. in Engl. Jahrb. xvi. 141.

Nile Land. Abyssinia: Begemeder; Mount Guna, 10,000 ft., *Schimper*, 1312!

10. **H. peristyloides,** *A. Rich. in Ann. Sci. Nat. sér.* 2, xiv. 270, *t.* 17, *fig.* 3. Stem 1 ft. or more high, base sheathed, middle leafy. Leaves oval-lanceolate, acute. Racemes elongate, somewhat lax-flowered. Bracts oval-lanceolate, very acute, convolute, as long as the flower. Sepals connivent, galeate; dorsal oval, obtuse, cucullate; lateral ascending, ovate, very acute. Petals simple, as long as the sepals, oboval, obtuse. Lip subcordate at the base, tripartite above; side lobes diverging, linear, obtuse; front lobe twice as long and twice as broad as the side lobes, linear, obtuse; spur clavate, half as long as the lip. Stigmatic processes contiguous, appressed to the lip, obtuse, canaliculate-concave. Anther channels very short.—A. Rich. Tent. Fl. Abyss. ii. 291; Reichb. f. in Walp. Ann. iii. 586; Kränzl. in Engl. Jahrb. xvi. 168.

Nile Land. Abyssinia: Tigre; Mount Sholoda and Mount Semayata, near Adowa, *Quartin-Dillon.*

Only known to me from the published descriptions.

11. **H. cardiochila,** *Kränzl. ex Engl. Hochgeb. Fl. Trop. Afr.* 182 (*name only*); *Kränzl. in Engl. Jahrb.* xvi. 144. Tuber 9–14 lin. long, 7 lin. broad. Stem strong, 20 in. high, 4 lin. broad; base clothed with several gaping sheaths; the upper part leafy up to the raceme.

Leaves 5–6, upright, long and ample-sheathed, oblong-lanceolate, acute, $4\frac{3}{4}$ in. long, 14 lin. broad. Racemes cylindrical, dense-flowered, 5 in. long. Bracts ovate, acuminate, a little longer than the flowers. Flowers white, $3\frac{1}{2}$ lin. diam. Dorsal sepal oblong, acute; lateral ovate, acute, oblique, erect, connivent, flat. Petals simple, oblong, obtuse; apex rounded, flat. Lip trilobed; base pandurate or cordate, with 2 rounded auricles; side lobes linear, falcate, recurved; front lobe linear, slightly broader, $3\frac{1}{2}$ lin. long; apex rounded, obtuse; spur cylindrical, pendulous, as long as the pedicel and lip. Stigmatic processes parallel to the base of the lip, incumbent, rounded in front. Anther channels very short. Rostellum small, obtuse.

Nile Land. Abyssinia: Tigre; Abba Gerima, near Adowa, on mountains, 6800 ft., *Schimper*.

Only known to me from the original description.

12. **H. tenuispica,** *Rendle in Journ. Bot.* 1895, 293. Plant slender, 2 ft. or more high, distantly-leaved. Leaves elongate-linear, acuminate, the lower sheathing, the upper amplexicaul, 4–7 in. long, 4–6 lin. broad. Bracts lanceolate or ovate-lanceolate, acuminate, 3–5 lin. long. Pedicels 4–5 lin. long. Sepals 1 lin. long; dorsal broadly ovate, obtuse, concave; lateral ovate-oblong, obtuse, reflexed. Petals ovate-oblong, concave, 1 lin. long. Lip $1\frac{1}{4}$ lin. long, trilobed; side lobes rather narrower and shorter than the front, diverging; front lobe linear-oblong, obtuse; spur cylindrical, a little dilated above, $2\frac{1}{2}$ lin. long. Stigmatic processes stout, subsessile, $\frac{1}{3}$ lin. long. Anther channel very short. Rostellum very short and tooth-like.

Nile Land. British East Africa: Ruwenzori, Butagu, 9000 ft., *Scott-Elliot*, 7952!

13. **H. Erythrææ,** *Rolfe*. Plant $1\frac{1}{4}$ ft. high. Tubers oblong, 8–10 lin. long. Leaves cauline, lanceolate or oblong-lanceolate, acute or acuminate, 2–$3\frac{1}{2}$ in. long, 5–9 lin. broad. Racemes 5–6 in. long, lax. Bracts lanceolate or ovate-lanceolate, acuminate, 4–9 lin. long. Pedicels 5–7 lin. long. Dorsal sepal ovate-oblong, subobtuse, $1\frac{3}{4}$ lin. long; lateral falcate-oblong, subobtuse, 2–$2\frac{1}{4}$ lin. long. Petals simple, oblong, subobtuse, nearly as long as the dorsal sepal and forming a galea with it. Lip tripartite; lobes subfiliform, subobtuse; lateral lobes $1\frac{1}{2}$–2 lin. long; front lobe $2\frac{1}{2}$ lin. long; spur filiform, very slightly thickened near the apex, 7 lin. long. Stigmatic processes clavate-oblong, 1 lin. long. Anther channels as long as the stigmas. Rostellum triangular-subulate, $\frac{1}{2}$ lin. long. — *H. ichneumoniformis*, Schweinf. in Bull. Herb. Boiss. ii. App. ii. 88, 112 (not Ridl.).

Nile Land. Eritrea: Ginda, 2900 ft., *Schweinfurth*, 123. Above Salomone, on the way to Maldi, 2600 ft., *Schweinfurth*, 164!

Distinct from the Madagascar *H. ichneumoniformis*, Ridl., to which it is referred by Schweinfurth.

14. **H. clarencensis,** *Rolfe.* Tuber oblong, 1¼ in. long. Plant ½–2¼ ft. high. Leaves cauline, oblong-linear, acute, 1½–10 in. long. Racemes 2–11 in. long, many-flowered. Bracts oblong-lanceolate, acute, 4–6 lin. long. Pedicels 4–6 lin. long. Sepals ovate-oblong, obtuse, 1½–1¾ lin. long; lateral suboblique. Petals ovate, obtuse, slightly shorter than the sepals. Lip 1¾ lin. long, trilobed from a broad base; side lobes oblong, obtuse, spreading; front lobe ovate-oblong, obtuse, broader than the side lobes; spur filiform, 5–6 lin. long. Stigmatic processes very short, stout, subacute. Anther channels a little shorter than the stigmas. Rostellum oblong, very short, obtuse or minutely bidentate.—*H. prœalta*, Lindl. in Journ. Linn. Soc. vi. 140; Hook. f. l.c. vii. 222 (not A. Rich.); Kränzl. in Engl. Jahrb. xvi. 180 (in part).

Upper Guinea. Fernando Po: top of Clarence Peak, 10,000 ft., *Mann*, 645!

Allied to the Bourbon *H. prœalta*, A. Rich., with which it has been confused, but the spur is much longer than the ovary, and not at all clavate.

15. **H. attenuata,** *Hook. f. in Journ. Linn. Soc.* vii. 221. Plant 1–1¼ ft. high. Leaves few, cauline, oblong or linear-oblong, acute, 1½–3 in. long, 3–7 lin. broad. Racemes 2½–5 in. long, somewhat lax. Bracts ovate-lanceolate, acuminate, 4–7 lin. long. Pedicels 3–4 lin. long. Flowers green. Dorsal sepal broadly ovate, obtuse, concave, 1¼ lin. long; lateral ovate-oblong, subobtuse or apiculate, 1½ lin. long. Petals entire, broad, ovate, obtuse, 1¼ lin. long. Lip trilobed; lobes fleshy; side lobes linear, obtuse, spreading, 1 lin. long; front lobe linear-oblong, obtuse, a little longer than the side lobes; spur 5–6 lin. long, slender, very slightly thickened in the middle. Stigmatic processes short, oblong, ¼ lin. long. Anther channel shorter. Rostellum triangular, minute.—Kränzl. in Engl. Jahrb. xvi. 158.

Upper Guinea. Cameroons: 7000 ft., *Mann*, 2118! 8000–10,000 ft., *Johnston*, 30! 33!

16. **H. Spiranthes,** *Reichb. f. in Flora*, 1865, 178. Plant 9–12 in. high. Leaves about 3, cauline, linear-oblong, subacute, 1½–2½ in. long. Racemes 5 in. long, lax. Bracts oblong-lanceolate, acute or acuminate, 2½–6 lin. long. Pedicels 4–6 lin. long. Dorsal sepal ovate, subobtuse, 1½ lin. long; lateral falcate-oblong, subacute, 2 lin. long. Petals lanceolate-oblong, subfalcate, 1½ lin. long. Lip tripartite; lobes linear-filiform; side lobes 2¼ lin. long, curved at the apex; front lobe a little longer than the side lobes and slightly thickened at the apex; spur 8 lin. long, slender, slightly curved. Stigmatic processes oblong, subobtuse, ½ lin. long. Anther channels slender, erect, nearly as long as the stigmas. Rostellum linear, ⅓ lin. long.—Kränzl. in Engl. Jahrb. xvi. 165.

Lower Guinea. Angola: Pungo Adongo; Pedra Songue and about Catete, in grassy pastures, *Welwitsch*, 684!

17. **H. filicornis,** *Lindl. Gen. & Sp. Orch.* 318. Tubers ovate. Stem 1–1½ ft. long, 2-leaved. Leaves cauline, very erect, sheathing, oblong-

linear, obtuse, 4–6 in. long. Racemes lax, many-flowered. Bracts subulate, as long as the pedicels. Flowers minute, ichneumon-like, yellowish-green. Dorsal sepal ovate, acute, erect; lateral larger than the dorsal, retrorse, falcate. Petals simple, falcate, forming a hood with the dorsal sepal. Lip tripartite; side lobes deflexed, filiform, obtuse; front lobe ascending equal to or twice as long as the side lobes; spur filiform, compressed, as long as the pedicel. Stigmatic processes acute, deflexed. Anther channels short, erect. Capsule oblong.—Kränzl. in Engl. Jahrb. xvi. 170. *Orchis filicornis*, Thonn. in Schumach. Beskr. Guin. Pl. 397.

Upper Guinea. *Thonning.*

Only known to me from the published descriptions.

18. **H. chlorotica,** *Reichb. f. in Flora*, 1865, 178. Plant 15–18 in high, rather slender. Leaves about 3, narrowly linear, acute, $1\frac{1}{2}$–$2\frac{1}{2}$ in. long. Racemes 6 in. long, lax, subsecund. Bracts ovate-lanceolate, acuminate, 3–5 lin. long. Pedicels 4–6 lin. long. Dorsal sepal ovate, obtuse, 2 lin. long; lateral falcate-oblong, obtuse, 3 lin. long. Petals falcate, lanceolate, subacute, forming a hood with the dorsal sepal, 2 lin. long. Lip tripartite; lobes linear; side lobes $4\frac{1}{2}$ lin. long; front lobe a little longer than the side lobes; spur 11–13 lin. long, slender, very slightly thickened above. Stigmatic processes linear-oblong, $\frac{3}{4}$ lin. long. Anther channel slender, $\frac{1}{2}$ lin. long. Rostellum linear, $\frac{3}{4}$ lin. long.—Kränzl. in Engl. Jahrb. xvi. 145.

Upper Guinea. Angola: Huilla; amongst bushes in dry sandy places near a large hippopotamus lake, *Welwitsch*, 725!

19. **H. variabilis,** *Ridl. in Journ. Bot.* 1886, 294. Plant variable in all its parts. Tuber $\frac{3}{4}$ in. diam. Stem 1–$1\frac{1}{2}$ ft. high, stout. Leaves oblong, oblong-lanceolate or lanceolate, obtuse, acute or acuminate, appressed to the stem, $4\frac{3}{4}$–$5\frac{1}{4}$ in. long, $\frac{3}{4}$–$1\frac{1}{4}$ in. broad, decreasing upwards and more acute. Racemes dense, many-flowered. Bracts ovate, acute or acuminate. Flowers 1–3 lin. diam. Sepals more or less papillose inside; dorsal ovate, obtuse; lateral deflexed, oblong, acute. Petals simple, ovate, obtuse or acute, forming a hood with the dorsal sepal, more or less papillose inside. Lip trilobed from a cuneate base; lobes subequal, oblong-obtuse; side lobes with the outer margin rounded; spur filiform, incurved, 7–9 lin. long. Stigmatic processes compressed, tuberculate-dentate in front. Anther channels a little shorter.—Kränzl. in Engl. Jahrb. xvi. 144.

Nile Land. Abyssinia: Begemeder; Jan Meda, *Schimper*, 1292! Debra Tabor, in pastures, 8500 ft., *Schimper*, 1265! Mount Guna, 10,000 ft., *Schimper*, 1304! 1333!

A very variable species. Ridley makes two varieties, *parviflora* and *acutifolia*. I am not sure that all the above belong to a single species.

20. **H. bracteosa,** *Hochst. ex A. Rich. Tent. Fl. Abyss.* ii. 292. Plant about 1 ft. high. Leaves cauline, oblong-lanceolate or elliptic-lanceolate, acute, 2–4 in. long, 7–13 lin. broad, decreasing upwards.

Racemes 4–5 in. long, many-flowered. Bracts ovate to ovate-lanceolate, acute, 4–8 lin. long. Pedicels 3–4 lin. long. Dorsal sepal ovate-oblong, obtuse, minutely pubescent at the apex, $1\frac{3}{4}$ lin. long; lateral oblong, obtuse, $2\frac{1}{4}$ lin. long. Petals simple, subobliquely ovate-oblong, obtuse, $1\frac{3}{4}$ lin. long. Lip trilobed from a broad base, $2\frac{1}{2}$ lin. long; lobes oblong, obtuse; front lobe rather broader than the side lobes; spur filiform, $\frac{3}{4}$–1 in. long. Stigmatic processes broadly oblong, compressed, obtuse or retuse. Anther channel shorter. Rostellum minute, obtuse, tooth-like.—Reichb. f. in Walp. Ann. iii. 587; Kränzl. in Engl. Jahrb. xvi. 159.

Nile Land. Abyssinia: Semen Prov., *Schimper*, 595! Begemeder; Mount Guna, *Schimper*, 1304!

Mozamb. Dist. German East Africa: Kilimanjaro; Kifinika Volcano, 8800 ft., *Volkens*, 1339!

21. **H. distantiflora,** *A. Rich. Tent. Fl. Abyss.* ii. 291. Stem erect, 18 in. high, usually 2-leaved. Leaves sheathing at the base, lanceolate, very acute. Spikes elongate, slender; flowers distant. Bracts oval-lanceolate, very acute, semiconvolute, exceeding the ovary. Flowers small, sessile, greenish. Dorsal sepal oval, erect, concave, apiculate, subcarinate, margin ciliolate; lateral oval-lanceolate, acute. Petals oval, obtuse, concave, suboblique, ciliate, inappendiculate, a little shorter than the sepals. Lip tripartite; side lobes obliquely oval-lanceolate, acute; front lobe oval, obtuse, twice as broad as the side lobes; spur as long as the pedicel, scarcely inflated; apex acute. Stigmatic processes curved upwards, short.—Reichb. f. in Walp. Ann. iii. 586; Kränzl. in Engl. Jahrb. xvi. 175.

Nile Land. Abyssinia: Shire; near Maigouagoua, *Quartin-Dillon.*

Only known to me from the published descriptions.

22. **H. deflexa,** *Hochst. ex Kränzl. in Engl. Jahrb.* xvi. 146. Tuber oblong, 6–9 lin. diam. Stem 8–15 in. high, rather slender, with 2–3 cauline leaves. Leaves lanceolate or oblong-lanceolate, acute or acuminate, $1\frac{3}{4}$–$3\frac{1}{2}$ in. long, 3–9 lin. broad, decreasing upwards. Racemes 3–6 in. long, lax, many-flowered. Bracts ovate to lanceolate, acute, 3–6 lin. long. Pedicels $4\frac{1}{2}$–6 lin. long. Flowers among the smallest in the genus. Dorsal sepal broadly ovate, obtuse, $1\frac{3}{4}$–2 lin. long; lateral oblong, subfalcate, obtuse or apiculate, deflexed, $2\frac{1}{2}$ lin. long. Petals obliquely subfalcate–oblong, acute, agglutinated to the dorsal sepal, $1\frac{3}{4}$ lin. long. Lip trilobed; side lobes filiform, obtuse, 2–$2\frac{1}{2}$ lin. long; front lobe linear, 3 lin. long, rather broader; spur filiform, slightly thickened near the apex, 7–8 lin. long. Stigmatic processes oblong, obtuse, $\frac{1}{2}$–$\frac{3}{4}$ lin. long, papillose. Anther channels slender, as long as the stigmatic processes. Rostellum subulate, $\frac{1}{2}$ lin. long.

Nile Land. Abyssinia: Tigre; near Jelajeranne, *Schimper*, 1991! and without precise locality, *Schimper*, 606.

23. **H. tridactyla,** *A. Rich. Tent. Fl. Abyss.* ii. 292. Tubers 5–9 lin. diam. Stem 8–12 in. high, squamate at the base. Leaves remote, oblong, acute, $2\frac{1}{4}$–$2\frac{3}{4}$ in. long, 5–7 lin. broad, the upper decreasing to the bracts. Racemes elongate, 4–5 in. long. Bracts acuminate, 3–6 lin. long. Pedicels 3–5 lin. long. Flowers among the smallest in the genus. Dorsal sepal ovate, obtuse, $1\frac{1}{2}$ lin. long; lateral deflexed, obovate-oblong, acute, larger than the dorsal sepal. Petals simple, linear or oblong, acute. Lip trilobed; lobes equal and fleshy; spur pendulous, filiform, more than twice as long as the pedicel. Stigmatic processes glandular, porrect, acute. Anther channels equal, straight. Rostellum suddenly narrowed from a broad base, as long as the anther. Staminodes minute, subglobose.—Reichb. f. in Walp. Ann. iii. 586; Kränzl. in Engl. Jahrb. xvi. 145.

Nile Land. Abyssinia: Tigre; near Abba Gerima, *Quartin-Dillon* (ex *Richard*); on Mount Mettgalo, 6700 ft., *Schimper*, 551 (ex *Kränzlin*).

Mozamb. Dist. German East Africa: Kilimanjaro, Marangu, 5250 ft., *Volkens*, 2320!

24. **H. Schinzii,** *Rolfe.* Plant 1–$1\frac{1}{4}$ ft. high. Tuber oblong, 2–$2\frac{3}{4}$ in. long. Leaves cauline, numerous, linear, lanceolate, or ovate-lanceolate, subacute, $1\frac{1}{2}$–$3\frac{3}{4}$ in. long, 3–7 lin. broad. Racemes 4–$4\frac{1}{2}$ in. long, lax or somewhat dense, many-flowered. Bracts ovate-lanceolate, acute, 6–11 lin. long. Pedicels 10–12 lin. long. Dorsal sepal ovate, subobtuse, cucullate, 5–6 lin. long; lateral elliptic-oblong, subobtuse, 5–6 lin. long. Petals entire, suborbicular-ovate, obtuse, 5–6 lin. long. Lip trilobed from a short, broad base; side lobes falcate-linear, acute, $1\frac{1}{4}$ lin. long; front lobe linear-filiform, obtuse, rather fleshy, 6 lin. long; spur 10–13 lin. long, cylindrical below, clavate at the apex. Stigmatic processes clavate-oblong, $1\frac{1}{2}$ lin. long. Anther channels triangular, acute, nearly as long as the stigmas. Rostellum very broadly triangular, apiculate, $2\frac{1}{2}$ lin. long, the basal angles broad and obtuse, descending in front of the anther channels.

Lower Guinea. Amboland: Olukonda and Omatope, *Schinz*, 20!

25. **H. epipactidea,** *Reichb. f. in Flora*, 1867, 100. Plant 1–$1\frac{1}{4}$ ft. high. Tuber elongate-ovate, $1\frac{1}{2}$–$1\frac{3}{4}$ in. long, "goat-scented." Stem 11 in. high. Leaves cauline, numerous, dense, ovate, ovate-oblong, or lanceolate, subacute or acuminate, amplexicaul, $1\frac{1}{2}$–3 in. long, 4–9 lin. broad, keeled. Racemes 4–5 in. long, rather lax. Bracts ovate-lanceolate, acuminate, 5–9 lin. long. Pedicels 6–10 lin. long. Flowers showy, sepals green, petals and lip white. Dorsal sepal elliptic-oblong, obtuse, $4\frac{1}{2}$–5 lin. long; lateral oblique, deflexed, much narrower than the dorsal, lanceolate-oblong, obtuse, 5 lin. long. Petals entire, broadly ovate, obtuse, $4\frac{1}{2}$–5 lin. long. Lip obscurely trilobed; side lobes reduced to small, narrow wings near the base, with a short, free, obtuse apex; front lobe subspathulate-linear, obtuse, fleshy, 4 lin. long; spur 11–13 lin. long, cylindrical below, clavate near the apex. Stigmatic processes broadly oblong, very short. Anther channels slender, as long as the

stigmas. Rostellum broadly ovate-triangular, 2 lin. long, basal angles broad and obtuse, descending in front of the anther channels.—Kränzl. in Engl. Jahrb. xvi. 167.

Lower Guinea. Angola: Huilla; in clayey marshes near the River Monino, *Welwitsch*, 735!

A remarkable species nearly allied to the preceding, but differing in the reduced side lobes of the lip and various other characters.

26. **H. procera,** *Lindl. Gen. & Sp. Orch.* 318. Plant 2 ft. high. Leaves about 5 on the lower part of the stem, spreading, oblong or lanceolate-oblong, subobtuse, the upper decreasing to the bracts. Racemes about 6 in. long, many-flowered. Bracts ovate-lanceolate, acute, $\frac{1}{2}$–1 in. long. Pedicels $1\frac{1}{2}$–$2\frac{1}{4}$ lin. long. Dorsal sepal ovate, subobtuse, 5–6 lin. long. Lateral obliquely ovate, subacute, 5–6 lin. long. Petals ovate-oblong, subobtuse, as long as the sepals. Lip trilobed from an oblong base; side lobes linear, acute, 5–7 lin. long; front lobe a little broader than the side lobes; spur 3–$3\frac{1}{2}$ in. long, slender below, somewhat thickened near the apex. Stigmatic processes subclavate, $1\frac{1}{2}$ lin. long. Anther channels slender, curved, as long as the stigmas. Rostellum triangular, acute.—Lindl. Bot. Reg. t. 1858; Kränzl. in Engl. Jahrb. xvi. 164. *Orchis procera*, Afzel. ex Sw. in Vet. Akad. Handl. Stockh. xxi. (1800) 207 (name only); Pers. Syn. Pl. ii. 506.

Upper Guinea. Sierra Leone; *Afzelius* (ex *Lindley*), *Loddiges.*

This seems very near *H. gabonensis*, Reich. f., especially in the lip. Only known to me from the figure, the specimen not having been preserved.

27. **H. hircina,** *Reichb. f. in Flora*, 1867, 100. Tuber ovoid, 14 lin. long, "strongly goat-scented." Stem 11–12 in. high. Leaves cauline, numerous, dense, oblong-triangular, $3\frac{1}{4}$ in. long, 14 lin. broad. Racemes many-flowered, 3 in. long. Bracts triangular-ovate, acuminate, 6–9 lin. long. Flowers green. Sepals oblong-triangular, subacute, 6 lin. long. Petals ovate, subacute, as long as the sepals. Lip tripartite; side lobes short, tooth-like; front lobe linear, acute; spur cylindrical below, clavate at the apex, $2\frac{1}{4}$–$2\frac{3}{4}$ in. long. Stigmatic processes short, thick, retuse. Anther channels ascending. Rostellum triangular, acuminate, exceeding the anther.—Kränzl. in Engl. Jahrb. xvi. 166.

Lower Guinea. Angola: Huilla; in sandy places with small shrubs and Gladioli, *Welwitsch*, 736!

28. **H. gabonensis,** *Reichb. f. in Bot. Zeit.* 1852, 934. Plant $1\frac{1}{4}$–$1\frac{1}{2}$ ft. high. Leaves about 5, subradical, oblong-lanceolate, acute, 3–$4\frac{1}{2}$ in. long, 7–10 lin. broad; sheaths about 3, small. Racemes with 3–4 rather large flowers. Bracts ovate-lanceolate, acute, 4–6 lin. long. Pedicels $1\frac{1}{2}$ in. long. Flowers white. Dorsal sepal broadly ovate, obtuse, 4 lin. long; lateral obliquely and broadly semiovate, $4\frac{1}{2}$ lin. long. Petals ovate-oblong, obtuse, $3\frac{1}{2}$ lin. long. Lip tripartite

from a short broad base; side lobes subulate-acuminate, diverging, 6 lin. long; front lobe linear or subspathulate-linear, 5–6 lin. long; spur $2\frac{3}{4}$–$3\frac{1}{2}$ in. long, slender below, a little thickened upwards. Stigmatic processes very short, fleshy, 1 lin. long. Anther channels slender, ascending, 2 lin. long. Rostellum triangular, subacute, 1 lin. long.—Kränzl. in Engl. Jahrb. xvi. 159.

Lower Guinea. Gaboon, cultivated specimen, *Pescatore.* Princes Island, *Quintas*, 7!

29. **H. eburnea,** *Ridl. in Journ. Bot.* 1886, 293. Tuber "3 in.," lanate. Leaves 2, radical, rounded, obtuse or orbicular, spreading, 3 in. long. Scapes $1\frac{1}{2}$ ft. long. Bracts membranous, "3–4," lax, lanceolate, long acuminate, veined, nearly 1 in. long. Flowers several, rather large, white. Pedicels with the ovary 2 in. long. Dorsal sepal galeate, cucullate, lanceolate, acuminate; lateral reflexed, obliquely obcuneate, acuminate, 5-nerved, $\frac{1}{2}$ in. long. Petals narrowly linear, erect, simple. Lip trilobed, base narrow; lobes very narrowly linear, acute or acuminate, about 1 in. long; spur 3 in. long, filiform, acute, attenuate towards the apex. Anthers acuminate; pollen yellow, with long pedicels. Stigmatic processes porrect, rather large.

Upper Guinea. Bornu: Mandara, among bushes, very rare, *Vogel!*

30. **H. Staudtii,** *Kränzl. MS.* Plant tall, the part seen about $1\frac{1}{2}$ ft. high, leafy. Leaves lanceolate or oblong-lanceolate, sessile, acuminate, largest seen $2\frac{1}{2}$ in. long, 6 lin. broad, decreasing upwards. Racemes 4 in. or more long, lax, few-flowered. Bracts lanceolate, acuminate, 6–8 lin. long. Pedicels $1\frac{3}{4}$–2 in. long. Dorsal sepal ovate, obtuse, cucullate, $4\frac{1}{2}$ lin. long; lateral very oblique, semiorbicular-obovate, obtuse, $4\frac{1}{2}$ lin. long. Petals subobliquely elliptic-oblong, obtuse, 4 lin. long. Lip $2\frac{1}{2}$ lin. long, linear-oblong at the base, trilobed above; side lobes filiform-linear, 9 lin. long; front lobe linear, subobtuse, 5 lin. long; spur 4 in. long, cylindrical, a little stouter above. Stigmatic processes oblong, stout, $1\frac{1}{2}$ lin. long. Anther channels rather stout, 3 lin. long. Rostellum triangular, acute, $1\frac{1}{2}$ lin. long. Staminodes oblong, obtuse, $\frac{3}{4}$ lin. long.

Upper Guinea. Cameroons: Yaunde, 2600 ft., *Zenker & Staudt,* 503!

31. **H. Milnei,** *Reichb. f. Otia Bot. Hamb.* ii. 96. Plant "perhaps over 2 ft. high." Leaves cauline, ovate, acute, distant, with 1 lanceolate sheath above them (lower leaves not collected). Racemes lax, many-flowered. Bracts lanceolate, apiculate, not $\frac{1}{2}$ as long as the pedicel. Pedicels over 1 in. long. Sepals oblong-lanceolate, acute. Petals linear-falcate, obtuse, 2-nerved. Lip unguiculate, trifid to $\frac{1}{3}$ from the base; lobes linear, acute, divaricate; spur filiform, exceeding the pedicel. Stigmatic processes terete, uncinate, elongate. Anther channel slender. Rostellum triangular, small.—Kränzl. in Engl. Jahrb. xvi. 147.

Lower Guinea. Gaboon, in woods, *Milne.*

Only known to me from the original description.

32. **H. psiloceras,** *Welw. ex Reichb. in Flora,* 1867, 99. Stem "2–3 ft. long," base about 5 lin. diam. Leaves cauline, oblong, acuminate or acute, 3–5½ in. long, 1–1½ lin. broad. Racemes rather lax, 4 in. long. Bracts large, acuminate, 6–12 lin. long. Pedicels 2½ in. long. Dorsal sepal ovate, acute, carinate; lateral deflexed, semiovate, acute. Petals simple, acute, base very broadly ovate. Lip tripartite; side lobes filiform, acute; front lobe linear, subacute, as long as the side lobes; spur very long, filiform, 6–6½ in. long, apex slightly thickened. Stigmatic processes elongate, spathulate, excavate. Anther channels a little shorter than the stigmas.—Kränzl. in Engl. Jahrb. xvi. 165.

Lower Guinea. Angola: Pungo Adongo; Pedro de Cazella, in shady rock-fissures, very rare, *Welwitsch,* 680!

33. **H. vaginata,** *A. Rich. in Ann. Sci. Nat. sér.* 2, xiv. 269, *t.* 17, *fig.* 2. Plant about 8 in. high. Leaves 2, radical, spreading, broadly ovate, apiculate, 1¾–2¼ in. long; sheaths ovate-lanceolate, acuminate, decreasing upwards. Raceme 2½ in. long, many-flowered. Bracts ovate-lanceolate, acuminate, 5–7 lin. long. Pedicels 4–5 lin. long. Dorsal sepal ovate, subobtuse, 1½–2 lin. long; lateral deflexed, subfalcate-oblong, subobtuse, 2½ lin. long. Petals simple, subfalcate-oblong, subobtuse, nearly as long as the dorsal sepal. Lip trilobed; lobes linear-oblong, obtuse, 2½–3 lin. long, subequal; front lobe a little longer than the side lobes; spur 9–11 lin. long, slender at the base, slightly thickened above. Stigmatic processes broadly clavate-oblong, ¾ lin. long. Anther channels as long as the stigmas. Rostellum oblong, truncate, ¾ lin. long.—A. Rich. Tent. Fl. Abyss. ii. 290; Reichb. f. in Walp. Ann. iii. 586; Kränzl. in Engl. Jahrb. xvi. 152.

Nile Land. Abyssinia: Semen; in the middle mountain region towards Shoata, *Schimper,* 1350! Begemeder Prov., 8200 ft., *Schimper,* 552! and without precise locality, *Schimper,* 614! 634! 639!

34. **H. engleriana,** *Kränzl. in Engl. Jahrb.* xvii. 68, *t.* 5, *fig. A.* Stem 2 ft. high, strong, densely leafy from the base to the raceme. Leaves lanceolate, acuminate or acute, decreasing upwards into the bracts. Racemes distichous, few- to 8-flowered. Bracts oblong or oblong-lanceolate, ½–⅔ as long as the pedicels. Dorsal sepal galeate, acute, 8 lin. long; lateral larger than the dorsal, semiovate, acute, deflexed, 9 lin. long. Petals lanceolate, acuminate, free from the dorsal sepal, 8 lin. long. Lip 10 lin. long, basal third entire, linear-cuneate, then shortly trilobed; side lobes broadly semiovate, outer margin fimbriate; front lobe linear, obtuse; spur filiform, 4½–6 in. long, slightly curved, apex scarcely thickened. Stigmatic processes porrect, a little dilated near the apex, about 3 lin. long. Anther channels shorter than the stigmas, bipartite at the apex. Rostellum minute, triangular.

Upper Guinea. Togo: Bismarcksburg, *Büttner,* 692.

Only known to me from the published description and figure.

35. **H. tricruris,** *Reichb. f. in Bonplandia,* iii. 214. Stem 8–12 in. high, with 1 or 2 open-mouthed sheaths at the base, leafy above. Leaves 3–4, ovate or ovate-oblong, apiculate, $2\frac{3}{4}$–$3\frac{1}{4}$ in. long, $1\frac{1}{4}$–$1\frac{1}{2}$ in. broad, the upper close to the raceme. Racemes 5–8-flowered. Bracts large, leafy, oblong, acute, exceeding the pedicels, $\frac{3}{4}$–1 in. long. Sepals ovate-oblong, obtuse or apiculate, 5 lin. long. Petals oblong, connivent with the dorsal sepal, margins minutely ciliolate. Lip trilobed, puberulous; side lobes pectinate outside, about as long as the front lobe; front lobe subspathulate-linear, obtuse, entire, broader than the side lobes, with an elevated middle line, 6 lin. long; spur cylindrical, curved, $\frac{3}{4}$ in. long. Stigmatic processes very short, globose. Anther channels porrect, as long as the stigmatic processes. Rostellum triangular, obtuse, short.—Kränzl. in Engl. Jahrb. xvi. 194. *Platanthera tricruris,* A. Rich. in Ann. Sci. Nat. sér. 2, xiv. 265, t. 16 fig. 1.

Nile Land. Abyssinia: Tigre; Mt. Sholoda, near Adowa, *Quartin-Dillon!* Semen; mountain sides between Endjedcap and Shoata, *Schimper,* 1255! and without precise locality, *Schimper,* 623!

36. **H. decorata,** *Hochst. ex A. Rich. Tent. Fl. Abyss.* ii. 294. Plant 6–9 in. high. Leaves 3–4, cauline, ovate-lanceolate to oblong-lanceolate, subacute or acute, 1–3 in. long, 6–11 lin. broad. Racemes short, 2–7- rarely 1-flowered. Bracts ovate-lanceolate, acute, 1–$1\frac{1}{2}$ in. long. Pedicels $\frac{3}{4}$–1 in. long. Dorsal sepal ovate, obtuse, pubescent, 4 lin. long; lateral suboblique, ovate-oblong, apiculate, $4\frac{1}{2}$–5 lin. long. Petals subobliquely ovate-oblong, subobtuse, 4 lin. long. Lip deeply trilobed; side lobes divaricate, subfalcate-oblong, 8 lin. long, apex divided into about 5 filiform segments; front lobe triangular-linear, subobtuse, $6\frac{1}{2}$ lin. long; spur slender, 1–$1\frac{1}{4}$ in. long. Stigmatic processes thick, straight, about 2 lin. long, confluent with the anther cells and not exceeding them. Rostellum very shortly triangular and obtuse. Anther cells widely diverging below.—Reichb. f. in Walp. Ann. iii. 587; Kränzl. in Engl. Jahrb. xvi. 192.

Nile Land. Abyssinia: Semen: Mount Bachit, a little below Endjedcap, *Schimper,* 1253! and without precise locality, *Schimper,* 629! Begemeder; Mount Guna, 10,000 ft., *Schimper,* 1306!

37. **H. quartiniana,** *A. Rich. in Ann. Sci. Nat. sér.* 2, xiv. 271, *t.* 17, *fig.* 4. Plant 1–$1\frac{1}{4}$ ft. high. Leaves cauline, elliptic-oblong to oblong-lanceolate, acute, 2–3 in. long, $\frac{1}{2}$–$1\frac{1}{2}$ in. broad. Racemes 3–4 in. long, with few large flowers. Bracts ovate-lanceolate or lanceolate, leaf-like, 1–$1\frac{1}{2}$ in. long. Pedicels 6–9 lin. long. Dorsal sepal triangular-ovate, subobtuse, 3 lin. long; lateral semiovate-oblong, subfalcate, apiculate, $3\frac{1}{2}$ lin. long. Petals obliquely semiovate or cordately lobed on one side, obtuse, 3 lin. long. Lip 6–7 lin. long, deeply trilobed; side lobes divided on the outer side into about 9 slender filaments; front lobe linear-lanceolate, acuminate; spur cylindrical, $1\frac{1}{2}$–$1\frac{3}{4}$ lin. long. Column bipartite; arms diverging. Stigmatic process stout, $1\frac{1}{2}$ lin. long; stigmas oblique, 1 lin. long. Anthers adnate to the base

of the arms; channels slender, free part 1 lin. long. Rostellum with the middle lobe obsolete.—A. Rich. Tent. Fl. Abyss. ii. 293, t. 86; Reichb. f. in Walp. Ann. iii. 587; Kränzl. in Engl. Jahrb. xvi. 190; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 88, 112.

Nile Land. Abyssinia: Tigre; Mount Sholoda, near Adowa, *Quartin-Dillon*, 104! 110! the latter mixed with a *Lissochilus* in fruit. Semen; mountain sides towards Shoata, *Schimper*, 1349! Eritrea: Ginda, near Girsa, 2400 ft., *Schweinfurth*, 442! Mt. Savur, above Filfil, 4900 ft., *Schweinfurth*, 163.

The stigmatic arms are stouter and shorter than in Richard's figure.

38. **H. anisoptera,** *Reichb. f. Otia Bot. Hamb.* ii. 101. Plant strong. Stem 18 in. high, densely leafy. Leaves ovate, acute, amplexicaul, the largest $4\frac{3}{4}$ in. long, $1\frac{1}{2}$ in. broad, decreasing upwards into the bracts. Racemes $4\frac{3}{4}$ in. long, many-flowered. Bracts ovate, acuminate, 9–14 lin. long, slightly longer than the flowers. Flowers, excluding the lip, $\frac{1}{2}$ in. diam. Dorsal sepal small, triangular; lateral very large, oblong, acute. Petals triangular, arcuate, base extended into an obtuse angle, minutely ciliate, with a pair of nerves outside the median one. Lip tripartite; lobes 7 lin. long; side lobes linear, pectinate outside, with 2–9 segments; front lobe linear, acute; spur 2 in. long. Stigmatic processes large, produced, retuse.—Kränzl. in Engl. Jahrb. xvi. 192.

Nile Land. Abyssinia: Begemeder; Mount Debra Tabor, 8400 ft., *Schimper*, 1320!

39. **H. macrantha,** *Hochst. ex A. Rich. Tent. Fl. Abyss.* ii. 294, *t.* 87. Plant 1–$2\frac{1}{4}$ ft. high. Leaves cauline, ovate to ovate-lanceolate, acute, 2–6 in. long, 1–$1\frac{3}{4}$ in. broad. Racemes 3–7 in. long, usually many-flowered. Bracts ovate to ovate-lanceolate, acute, leaf-like, $\frac{3}{4}$–$1\frac{1}{2}$ in. long. Pedicels $\frac{3}{4}$–$1\frac{1}{4}$ in. long. Dorsal sepal ovate, apiculate, 10 lin. long; lateral subobliquely ovate-oblong, apiculate, 10–11 lin. long. Petals lanceolate-oblong, subobtuse or apiculate, 9 lin. long. Lip shortly and broadly clawed, trilobed; claw $2\frac{1}{2}$ lin. long; lobes 9–11 lin. long; side lobes with the outer margin broken up into 8–10 filiform segments, front lobe linear, subacute; spur cylindrical, curved, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. long. Column bipartite; arms $\frac{3}{4}$ in. long; stigmatic processes with oblique apex. Anther cells widely separated by a broad connective; caudicles slender, free part $1\frac{1}{2}$ lin. long. Rostellum with middle lobe obsolete.—Reichb. f. in. Walp. Ann. iii. 587; Kränzl. in Engl. Jahrb. xvi. 190; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 88.

Nile Land. Abyssinia: Wodjerat Prov., *Quartin-Dillon & Petit*, 102! Semen; between Endjedcap and Shoata, *Schimper*, 1256! Begemeder; mountains at Debra Tabor, 8400 ft., *Schimper*, 1322! and without precise locality, *Rüppell*, *Schimper*, 608! 626!

Also found in Arabia, according to Schweinfurth.

40. **H. splendens,** *Rendle in Journ. Linn. Soc.* xxx. 395. Plant 1–$1\frac{1}{4}$ ft. high. Leaves cauline, ovate to ovate-lanceolate, acute, 2–4 in. long, 1–$1\frac{1}{2}$ in. broad, decreasing upwards into the bracts. Bracts ovate, acute, 1–$1\frac{1}{4}$ in. long. Pedicels 1–$1\frac{1}{4}$ in. long. Dorsal sepal ovate, subacute, 1 in. long; lateral subobliquely ovate-oblong, apiculate.

Petals lanceolate-oblong, subobtuse, 13 lin. long. Lip narrowly clawed, trilobed; claw 5 lin. long; lobes 1 in. long; side lobes broken up on the outer edge into 10–12 filiform segments; front lobe linear, subobtuse; spur cylindrical, slightly curved, $1\frac{1}{2}$ lin. long. Stigmatic processes $\frac{3}{4}$ in. long, free part $4\frac{1}{2}$ lin. long. Anther cells adnate up to the middle; caudicles slender, $2\frac{1}{2}$ lin. long, free. Rostellum with front lobe obsolete.—*H. aff. H. macranthæ*, Reichb. f. ex Oliv. in Trans. Linn. Soc. ser. 2, ii. 349.

Mozamb. Dist. German East Africa: Mount Kilimanjaro; 6000 ft., *Johnston!* at Mochi, 4000–5500 ft., and higher slopes above Morang to 10,000 ft., *Taylor!* Marangu, 4900 ft., *Volkens*, 259!

Near *H. macrantha*, Hochst., but the flowers are larger, the claw of the lip much narrower and fully twice as long, and the anther cells adnate as far as the middle to the stigmatic arms, the free portion of the latter thus being proportionally much shorter.

41. **H. præstans,** *Rendle in Journ. Bot.* 1895, 293. Plant 1–$1\frac{1}{2}$ ft. high. Leaves cauline, ovate-lanceolate or oblong, acute or subobtuse, 2–6 in. long, $\frac{3}{4}$–$1\frac{1}{4}$ in. broad, decreasing upwards into the bracts. Racemes 5–6 in. long, many-flowered. Bracts ovate, acute. $\frac{3}{4}$–1 in. long. Pedicels 6–9 lin. long. Flowers yellow-green. Dorsal sepal ovate, subobtuse or apiculate, 8 lin. long. Petals lanceolate-oblong, subfalcate, subobtuse, 8 lin. long. Lip narrowly clawed, trilobed; claw 4 lin. long; side lobes 11 lin. long, broken up into about 12 filiform segments on the outside; front lobe linear, subobtuse, 6 lin. long; spur cylindrical, 10 lin. long, slightly thickened above. Stigmatic arms 6 lin. long, free part $3\frac{1}{2}$ lin. long. Anther cells adnate up to the middle; caudicles slender, free for $2\frac{1}{4}$ lin. Rostellum with the middle lobe obsolete.

Nile Land. British East Africa: Ruwenzori, sunny hillsides, 6000–7000 ft., *Scott-Elliot*, 7808!

Mozamb. Dist. British Central Africa: Shire Highlands; at the top of Mt. Zomba, *Buchanan*, 301! near Blantyre, *Last!*

Differs from *H. splendens*, Rendle, in its narrower leaves, smaller flowers, shorter and not acuminate petals, and much shorter spur.

42. **H. Mannii,** *Hook. f. in Journ. Linn. Soc.* vii. 222. Plant 6–12 in. high. Leaves cauline, oblong-lanceolate, acute, 2–$4\frac{1}{2}$ in. long. Racemes 2- to many-flowered, up to 6 in. long. Bracts 8–12 lin. long. Pedicels 7–9 lin. long. Flowers green. Dorsal sepal ovate, subobtuse, cucullate, 7 lin. long; lateral oblong or semiovate-oblong, obtuse, 7 lin. long. Petals oblong, subobtuse, 7 lin. long, forming a galea with the dorsal sepal. Lip narrowly unguiculate, trilobed; unguis $2\frac{1}{2}$ lin. long; side lobes spreading, 8–$8\frac{1}{2}$ lin. long, basal half filiform, apical half broken up into 8–10 filiform lobes; front lobe linear, subacute, 7–$7\frac{1}{2}$ lin. long; spur 7 lin. long, slender below, subclavate near the apex. Column completely bipartite to the base; arms diverging, $\frac{1}{2}$ in. long. Anthers adnate to the arms for 3 lin.; caudicles slender, free for 1 lin. Stigmatic processes with a stalk $\frac{3}{4}$ lin. long above the anthers, then terminating in a recurved, unilateral, subclavate

lobe, 2 lin. long. Rostellum with front lobe obsolete.—Kränzl. in Engl. Jahrb. xvi. 190.

Upper Guinea. Cameroon Mountains, 5000–9000 ft., *Mann*, 2119! *Johnston*, 87! *Preuss*, 892 (ex *Kränzlin*).

43. **H. calva,** *Rolfe.* Tuber ovate-oblong, 8 lin. long, 5 lin. broad. Leaves 2, basal, horizontal, suborbicular or broadly ovate-orbicular, $1\frac{1}{2}$–$1\frac{3}{4}$ in. long, $1\frac{1}{2}$–2 in. broad. Scapes about 1 ft. high, with numerous triangular-lanceolate, acuminate, bract-like sheaths. Bracts narrowly ovate-lanceolate, acuminate, 4–7 lin. long. Pedicels 5–7 lin. long. Dorsal sepal ovate, acute, $2\frac{1}{2}$ lin. long; lateral obliquely ovate-oblong, with curved, acuminate apex, 3 lin. long. Petals bipartite; posterior lobe falcate-lanceolate, subobtuse, 2 lin. long; anterior lobe falcate-linear, $1\frac{3}{4}$ lin. long. Lip tripartite, with short entire base; lobes linear; side lobes $2\frac{1}{2}$ lin. long, somewhat divaricate; front lobe $3\frac{1}{4}$ lin. long; spur clavate, 5–6 lin. long. Stigmatic processes subclavate-linear, $1\frac{1}{2}$ lin. long. Anther channels free from the side lobes of the rostellum, and each about $1\frac{1}{2}$ lin. long; middle lobe of the rostellum very minute, tooth-like.—*H. dregeana*, var. *calva*, Reichb. f. in Flora, 1865, 179. *H. dregeana*, Kränzl. in Engl. Jahrb. xvi. 149, in part (not Lindl.).

Lower Guinea. Angola: Huilla; between Monino and Lake Ivantala, in shady woods, very rare, *Welwitsch*, 732!

44. **H. stylites,** *Reichb. f. & S. Moore in Journ. Bot.* 1878, 136. Plant $1\frac{1}{4}$–$1\frac{3}{4}$ ft. high. Leaves 2, radical, spreading, apparently appressed to the ground, very broadly ovate-orbicular, obtuse, sessile, $2\frac{1}{2}$–3 in. broad. Scapes with several small, lanceolate, acuminate bracts. Racemes $2\frac{1}{2}$–$4\frac{1}{2}$ in. long, many-flowered. Bracts lanceolate, acuminate, 4–7 lin. long. Pedicels 10–12 lin. long. Flowers white with yellow petals. Dorsal sepal elliptical, subobtuse, cucullate, $4\frac{1}{2}$–5 lin. long; lateral elliptic-oblong, subobtuse, 6–$6\frac{1}{2}$ lin. long. Petals bipartite; posterior lobe lanceolate, subobtuse, $4\frac{1}{2}$ lin. long; anterior lobe linear, subobtuse, as long as, but only half as broad as, the posterior. Lip 6–7 lin. long, trilobed for three-quarters its length; side lobes lanceolate-linear, subobtuse; front lobe subspathulate-lanceolate, subobtuse; spur cylindrical, $1\frac{1}{2}$–2 in. long. Stigmatic processes clavate-capitate, 2 lin. long. Anther channels slender, 1–$1\frac{1}{4}$ lin. long. Rostellum triangular, subulate, $1\frac{1}{2}$ lin. long.—Kränzl. in Engl. Jahrb. xvi. 77.

Nile Land. British East Africa: Nyika country, at Duruma, near Mombasa, *Wakefield!*

Mozamb. Dist. German East Africa: Lower slopes of Mount Kilimanjaro, 2000–3000 ft., *Johnston!*

45. **H. Mechowii,** *Reichb. f. in Flora*, 1882, 532. Leaves 2–3, basal, nearly orbicular, acute, $3\frac{1}{2}$ in. long, $4\frac{1}{4}$ in. broad. Stem 2–$3\frac{1}{2}$ ft. long, clothed up to the raceme with large, broadly oval, acute sheaths. Racemes few- and distant-flowered. Bracts large, oval, acute, 2–$2\frac{3}{4}$ in.

long, $\frac{3}{4}$–1 in. broad, primary nerves "denticulate-serrate." Flowers among the largest in the genus. Dorsal sepal large, ovate, acute, galeate, 10 lin. long; lateral deflexed, oblong, acuminate, 12–14 lin. long, nerves serrulate. Petals bipartite; lobes linear, much elongated; anterior lobe $1\frac{1}{2}$ in. long; posterior lobe a little shorter than the anterior. Lip trilobed; lobes linear, $1\frac{1}{2}$ lin. long; side lobes slightly shorter than the front one; spur $1\frac{3}{4}$ in. long, slender, inflated at the apex. Stigmatic processes porrect, capitate. Anther acute; channels filiform. Rostellum cucullate at the base; apex linear, acute, nearly as long as the anthers, margin fimbriate.—Kränzl. in Engl. Jahrb. xvi. 151.

Lower Guinea. Angola: Malange, Quango Region, *Mechow*, 450.
Only known to me from the published descriptions.

46. **H. subarmata,** *Reichb. f. Otia Bot. Hamb.* ii. 98. Plant $1\frac{1}{2}$–2 ft. high. Leaves 2, radical, orbicular or broadly ovate-orbicular, obtuse, flat on the ground, 5–7 in. long. Racemes 5–6 in. long, lax. Bracts lanceolate, acuminate, 7–10 lin. long. Pedicels $1\frac{1}{4}$–2 in. long. Dorsal sepal ovate-elliptical, subacute, cucullate, 4 lin. long; lateral subfalcate-oblong, as long as the dorsal, with a reflexed, acuminate apex more than 1 lin. long. Petals bipartite; posterior lobe linear, as long as the dorsal sepal and appressed to its margin; anterior lobe filiform-linear, 13 lin. long. Lip trilobed; lobes filiform-linear, subequal, 14 lin. long; spur slender, 3 in. long. Stigmatic processes clavate, slender below, $2\frac{1}{2}$ lin. long. Anther channels dilated below, about 2 lin. long. Rostellum subulate-filiform, $2\frac{1}{2}$ lin. long.—Kränzl. in Engl. Jahrb. xvi. 150.

Mozamb. Dist. British Central Africa: Nyasaland; Shibisa (Chikwawa), on the river Shire, *Kirk!* near Tete, among bushes, *Kirk!*

47. **H. armatissima,** *Reichb. f. Otia Bot. Hamb.* ii. 98. Tuber large, over $1\frac{1}{2}$ in. long, nearly $1\frac{1}{4}$ in. broad. Leaves 2, subopposite, large, basal very broadly ovate-orbicular, $3\frac{1}{4}$–$3\frac{3}{4}$ in. long, 4–5 in. broad. Scapes with 5–6 sheaths, 1–$1\frac{1}{4}$ ft. high. Bracts ovate, acuminate, 6–9 lin. long. Pedicels $1\frac{1}{2}$–$1\frac{3}{4}$ in. long. Flowers white. Dorsal sepal ovate, cucullate, acuminate or aristate, 5–6 lin. long; lateral broadly and obliquely semiovate, very acuminate, $5\frac{1}{2}$–$6\frac{1}{2}$ lin. long. Petals bipartite; posterior lobe lanceolate, agglutinated to and as long as the dorsal sepal; anterior lobe very long, filiform-linear, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long. Lip tripartite from a linear base; side lobes very long, filiform-linear. $1\frac{3}{4}$–2 in. long; front lobe much shorter and a little broader than the side lobes; spur very long, slender, $3\frac{1}{2}$–$4\frac{1}{4}$ in. long. Stigmatic processes recurved, capitate, 4 lin. long. Anther channels one-half as long as the stigmas. Rostellum subulate-acuminate, slightly curved, $2\frac{1}{2}$ lin. long.—Kränzl in Engl. Jahrb. xvi. 151; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 88, 112.

Nile Land. Abyssinia: Semen; on mountains by the Bellagas River, near Taserotsch, 4000–5000 ft., *Schimper*, 630! Eritrea: above Gergeret on the road to Maldi, 1000–1900 ft., *Schweinfurth*, 162! West of Ailet, 800 ft., *Schweinfurth*, 161; near Keren, *Steudner*, 696 (ex *Reichenbach*).

48. **H. Lugardii,** *Rolfe.* Leaves 2, radical, broadly suborbicular, 6 in. long, 7–8 in. broad, many-nerved. Scapes 20 in. high, bearing a few lanceolate sheaths; racemes 4 in. long, lax. Bracts lanceolate, acuminate, $\frac{3}{4}$–$1\frac{1}{4}$ in. long. Pedicels $1\frac{1}{2}$–$1\frac{3}{4}$ in. long. Flower white. Dorsal sepal ovate-lanceolate, acute, 6 lin. long; lateral falcately oblong-lanceolate, acuminate, 8 lin. long. Petals bipartite; posterior lobe falcate-linear, acute, as long as the dorsal sepal and adhering to its margins; anterior lobe filiform, resembling the lobes of the lip. Lip tripartite; lobes filiform, $1\frac{1}{2}$ in. long; spur elongate, very slender, 5–6 in. long. Stigmatic processes clavate, slender below, 3 lin. long. Anther channels 2 lin. long. Rostellum subulate, acuminate, 2 lin. long.

Mozamb. Dist. Ngamiland: Botletle Valley, *Lugard*, 215!

49. **H. villosa,** *Rolfe.* Plant 1 ft. high, villous-pubescent, 1-leaved (? 2-leaved) at the base. Leaf broadly cordate-orbicular, obtuse, $1\frac{1}{2}$ in. broad. Scapes with a few, lanceolate, acuminate sheaths; raceme 3 in. long, lax. Bracts lanceolate or ovate-lanceolate, acuminate, $3\frac{1}{2}$–5 lin. long. Pedicels 6 lin. long. Sepals elliptic-oblong, subobtuse, $3\frac{1}{2}$–4 lin. long. Petals cuneate-oblong, bilobed nearly to the middle, 4 lin. long; posterior lobe broad and obtuse; anterior lobe half as long and scarcely a third as broad as the posterior. Lip trilobed from a short entire base; side lobes linear-oblong, subobtuse, straight, 3 lin. long; front lobe incurved, linear, subobtuse, rather longer than the side lobes, concave with incurved margins; spur 7–8 lin. long, filiform below, clavate near the apex. Stigmatic processes clavate-oblong, subsessile, very short. Anther channels 1 lin. long. Rostellum triangular-oblong, subobtuse, $\frac{1}{2}$ lin. long.

Mozamb. Dist. German East Africa: without precise locality, *Hannington!*

Remarkable for its pubescent scape and inflorescence, also for the curiously lobed petals.

50. **H. Lecardii,** *Kränzl. in Engl. Jahrb.* xvi. 150. Tuber globose, $\frac{3}{4}$ in. diam. Leaf cordate-orbicular, hirsute. Scapes 13 in. long, with two small sheaths, hirsute to the apex. Racemes about 10-flowered; flowers distant. Bracts very small, ovate, acute, villous, 7 lin. long. Pedicels 7 lin. long, villous. Sepals $2\frac{1}{2}$ lin. long; dorsal very broadly ovate, obtuse; lateral deflexed, oblong, acute, densely pilose outside. Petals bipartite; posterior lobe linear, falcate, acute, margin very minutely ciliate; anterior lobe filiform, $\frac{3}{4}$ lin. long, four times as long as the posterior. Lip tripartite; side lobes filiform; front lobe linear, acute, shorter and broader than the side lobes; spur very long, filiform; apex scarcely thickened, acute, 3–4 times as long as the ovary, about 3 in. long. Stigmatic processes short, broadly capitate. Anther channels as long as the stigmas, ascending.

Upper Guinea. Upper Senegal: forest of Mahina, on the Bafing River, *Lecard*, 190.

Lecard (fide *Kränzlin*) remarks that this plant is curious in having only a single leaf appressed to the soil. I have not seen it.

51. **H. æquatorialis,** *Rendle in Journ. Linn. Soc.* xxx. 391. Plant rather strong, about 20 in. high. Tuber ovoid, $\frac{3}{4}$ in. long Radical leaves 2, large, orbicular, 3 in. broad; cauline sheath-like below distant, linear-lanceolate or lanceolate, 1 in. long, bract-like above, acuminate, decreasing upwards into the flowering bracts. Spikes oval or oblong, $2\frac{1}{4}$–4 in. long. Bracts lanceolate, acuminate, 7–9 lin. long. Pedicels $\frac{3}{4}$ in. long. Flowers 13 lin. diam. Dorsal sepal ovate, obtuse 5 lin. long; lateral spreading, obliquely ovate, subacute, broader than the dorsal, 6 lin. long. Petals bipartite; posterior lobe linear-falcate, acute, $4\frac{1}{2}$ lin. long; anterior lobe rather narrower than the posterior 5 lin. long. Lip tripartite; side lobes linear-filiform, $5\frac{1}{2}$ lin. long; front lobe broadly linear, subacute, longer than the side lobes; spur 18–20 lin. long, rather slender; apex acute. Stigmatic processes nearly straight, clavate, $1\frac{1}{2}$ lin. long. Anther channels elongate, slightly longer than the stigmas. Rostellum with a long, acute, triangular apex, elongate above the rounded anther.

Mozamb. Dist. German East Africa: between Umyamwezi and the coast, *Taylor!*

52. **H. macrura,** *Kränzl. ex Engl. Hochgeb. Fl. Trop. Afr.* 183. Plant $1\frac{1}{2}$–$1\frac{3}{4}$ ft. high. Leaves 2, radical, suborbicular, obtuse, $1\frac{1}{2}$–$2\frac{1}{2}$ in. long; sheaths oblong, subobtuse, decreasing upwards, sometimes with one or two of the lower somewhat leaf-like. Racemes with 3–6 large flowers. Bracts ovate, subacute, 7–12 lin. long. Pedicels $1\frac{1}{2}$–2 in. long. Dorsal sepal broadly ovate, cucullate, subobtuse, $5\frac{1}{2}$ lin. long; lateral obliquely semiovate-oblong, subobtuse, 6 lin. long. Petals bipartite; posterior lobe ovate, subobtuse, $5\frac{1}{2}$ lin. long; anterior lobe obovate-lanceolate, subobtuse, longer than the posterior. Lip trilobed, from a short entire base; lobes broadly oblong, obtuse, 6–7 lin. long; front lobe a little narrower and longer than the side lobes; spur about 6 in. long, filiform below, slightly thickened above. Stigmatic processes clavate, slightly curved, $2\frac{3}{4}$ lin. long. Anther channels shorter than the stigmas. Rostellum triangular-subulate, shorter than the anthers.—Kränzl. in Engl. Jahrb. xvi. 152.

Lower Guinea. Congo: Stanley Pool, *Callewaert!* Angola: Malange, *Mechow*, 369.

53. **H. thomana,** *Reichb. f. Otia Bot. Hamb.* ii. 97. Plant $1\frac{1}{2}$–$2\frac{1}{4}$ ft. high. Leaves radical, lanceolate or oblong-lanceolate, acute, attenuate into a short, sheathing base, 4–10 in. long, $1\frac{1}{4}$–$2\frac{1}{4}$ in. broad. Racemes 6–12 in. long, lax, many-flowered. Bracts lanceolate or ovate-lanceolate, acuminate, 7–12 lin. long. Pedicels 7–10 lin. long. Dorsal sepal elliptic-oblong, obtuse, $2\frac{1}{2}$–3 lin. long; lateral subobliquely ovate-oblong, obtuse, 3–$3\frac{1}{2}$ lin. long. Petals bipartite; posterior lobe falcate-linear, subobtuse, 3 lin. long, appressed to the margin of the dorsal sepal; anterior lobe triangular-subulate, acute, subfalcate, $\frac{3}{4}$–1 lin. long. Lip tripartite; side lobes falcate-linear, gradually thickened upwards and truncate, $3\frac{1}{2}$–4 lin. long; front lobe linear-filiform, $3\frac{1}{2}$–4 lin. long; spur 6–8 lin. long, slender below, thickened above the middle, thence

tapering to the apex. Stigmatic processes linear-oblong or clavate, obtuse, 1–1½ lin. long. Anther channels slender, nearly as long as the stigmas. Rostellum oblong, obtuse, ¼–½ lin. long.—Kränzl. in Engl. Jahrb. xvi. 110. *H. barrina*, Ridl. in Bolet. Soc. Brot. v. 202, t. D. fig. B; Kränzl. in Engl. Jahrb. xvi. 81.

Lower Guinea. Island of St. Thomas, 4000 ft., *Mann!* between Lagoa Amelia and San Pedro, 3900 ft., *Moller*, 7! 95! banks of the river Agua Grande, *Quintas*, 96!

Kränzlin places *H. barrina*, Ridl. in a different section of the genus from *H. thomana*, Reichb. f., but I am unable to separate them specifically. He also follows Ridley in transposing the descriptions of the posterior and anterior lobes of the petals. It is the latter which is the short one.

54. **H. malacophylla,** *Reichb. f. Otia Bot. Hamb.* ii. 97. Plants 1–2 ft. high. Tubers ¾–1 in. long. Leaves cauline, lanceolate or oblong-lanceolate, acute, attenuate at the base, 3–5 in. long, 8–12 lin. broad, the lower two or three reduced to sheaths. Racemes 3–9 in. long, lax. Bracts lanceolate, acuminate, 2–4 lin. long. Pedicels 4–5 lin. long. Dorsal sepal ovate, obtuse, 2¼ lin. long; lateral somewhat oblique, ovate-oblong, obtuse, 3 lin. long. Petals bipartite; posterior lobe falcate-linear, acute, as long as the dorsal sepal; anterior lobe filiform, 2¾ lin. long. Lip tripartite; lobes filiform, 2¼ lin. long; front lobe slightly stouter than the side; spur cylindrical, subobtuse, 4½ lin. long. Stigmatic processes clavate-oblong, ¾ lin. long. Anther channels nearly as long as the stigmas. Rostellum triangular-subulate, ¼ lin. long. Capsule oblong, pedicellate, 4–4½ lin. long.—Kränzl. in Engl. Jahrb. xvi. 66; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 87.

Nile Land. Eritrea: Ginda, near Quelle Felachit, 2900–3400 ft., *Schweinfurth*, 2201!

Also found in extra-tropical south-east Africa.

55. **H. tentaculigera,** *Reichb. f. in Flora*, 1867, 101. Stem about 16 in. high, 3–4-leaved at the base. Leaves ovate-oblong, subacute, fleshy, slightly carinate, 2–2½ in. long. Racemes lax, 7–8-flowered. Bracts ovate, acuminate, a little shorter than the pedicels, 6–9 lin. long. Dorsal sepal very large, ovate, cucullate-connivent, 5–6 lin. long; lateral ovate-lanceolate, acute, 6–7 lin. long. Petals bipartite; posterior lobe lanceolate-falcate, upright, hidden under the dorsal sepal; anterior lobe linear, much longer than the posterior, ¾ in. or more long. Lip tripartite; lobes linear-filiform; side lobes twice as long as the front; spur slightly longer than the ovary, curved forwards at first, then deflexed. Stigmatic processes parallel, broadly linear, more or less appressed to and as long as the anther channels.—Kränzl. in Engl. Jahrb. xvi. 71.

Lower Guinea. Angola: Huilla; between Ohai and Gambos, in sandy bushy places, *Welwitsch*, 716! 716B!

56. **H. njamnjamica,** *Kränzl. in Engl. Jahrb.* xvi. 106. Tuber nearly round, 5 lin. diam. Stem somewhat flexuous, 20–22 in. long, squamate at the base. Basal sheaths retuse, those above obtuse,

the uppermost acute, and increasing to the leaves. Leaves small, 3–4, oblong or lanceolate, acute, 12–14 lin. long, 4–5½ lin. broad, appressed to the stem, sheathing, the upper decreasing to the large bracts. Racemes elongate, 6¾ in. long. Bracts ovate or ovate-lanceolate, acute, longer than the flowers, the lower 13–14 lin. long, 3–4 lin. broad. Pedicels 7 lin. long. Flowers medium-sized. Dorsal sepal broadly oblong, acute, 3–3½ lin. long; lateral deflexed, semioblong, acuminate, 4 lin. long. Petals bipartite; lobes narrowly linear, falcate, longer than the dorsal sepal; anterior lobe narrower and longer than the posterior. Lip tripartite; lobes very similar to the petal lobes, 4½ lin. long; side lobes horizontal and reflexed; front lobe a little broader and shorter than the side lobes; spur inflated almost its entire length, acute, 4 lin. long. Stigmatic processes acute from a stouter base. Anther channels longer than the stigmas. Rostellum short, apex almost rectangular.

Nile Land. British East Africa: Niamuiam, between Gumba and Nganye, *Schweinfurth*, 3960.

Only known to me from the original description.

57. **H. ceratopetala,** *A. Rich. in Ann. Sci. Nat. sér.* 2, xiv. 267, *t.* 16, *fig.* 4. Plant 8–18 in. high. Leaves cauline, elliptical to oblong, subobtuse or apiculate, generally numerous, 1–4 in. long, ¾–1¾ in. broad, the upper somewhat smaller. Racemes many-flowered, 2–9 in. long. Bracts elliptic-ovate, subacute, 8–12 lin. long, 4–6 lin. broad. Pedicels 7–9 lin. long. Dorsal sepal 5 lin. long, cucullate, elliptic-oblong, obtuse; lateral falcate-oblong, apiculate, slightly oblique at the apex. Petals bipartite; posterior lobe linear-filiform, 5 lin. long; anterior lobe 12–14 lin. long, much stouter below, much curved or circinnate at the apex. Lip tripartite; lobes linear, distinctly attenuate above, about 5 lin. long; spur 8 lin. long, filiform, strongly clavate above. Stigmatic processes stout, clavate, truncate, 2 lin. long. Anther channels slender, slightly longer than the stigmas, curved at the apex. Rostellum tooth-like, ½ lin. long.—A. Rich. Tent. Fl. Abyss. ii. 295, t. 88; Reichb. f. in Walp. Ann. iii. 583; Kränzl. in Engl. Jahrb. xvi. 73.

Nile Land. Abyssinia: Tigre; Adowa, *Quartin-Dillon* (ex *Richard*). Begemeder; Gerra Abuna Tekla Haimanot, on the river Reb, 7000–8000 ft., *Schimper*, 1176! without locality, *Parkinson!*

58. **H. antennifera,** *A. Rich. in Ann. Sci. Nat. sér.* 2, xiv. 268, *t.* 17, *fig.* 1. Tuber ovate. Stem 10–12 in. long, leafy below, sheathed above. Leaves ovate-lanceolate or ovate-oblong, subacute, the upper ovate, acute, 2½–4 in. long, 12–15 lin. broad. Sheaths of scape ovate, acute, densely arranged. Racemes many-flowered, 3½–4½ in. long. Bracts ovate, or ovate-oblong, acute, pilose, 7–9 lin. long; margin ciliate. Pedicels 6 lin. long. Flowers medium-sized, 2½ lin. long. Dorsal sepal small, oblong-lanceolate, recurved at the apex, obtuse, ciliate, 1¾–2 lin. long; lateral reflexed, semiovate-oblong, acute, apiculate, 2½ lin. long. Petals bipartite; posterior lobe ligulate, obtuse, ciliate, as long as the dorsal sepal, appressed to its margin; anterior lobe

linear-lanceolate, acuminate, twice as long as the posterior lobe, $3\frac{1}{2}$–$4\frac{1}{2}$ lin. long. Lip 4 lin. long, tripartite; side lobes filiform; front lobe slightly longer and broader than the side; spur cylindrical below, clavate above, $4\frac{1}{2}$ lin. long. Stigmatic processes dilated above, cochleate, excavate, $1\frac{1}{4}$ lin. long. Anther channel slender, slightly longer than the stigmas. Rostellum triangular-subulate, 1–$1\frac{1}{4}$ lin. long.—A. Rich. Tent. Fl. Abyss. ii. 297; Kränzl. in Engl. Jahrb. xvi. 91. *H. leptobrachiata*, Ridl. in Journ. Bot. 1886, 293.

Nile Land. Abyssinia: Tigre; Adowa, *Quartin-Dillon* (ex *Richard*). Begemeder; Jan Meda, 8500 ft., on the border of copses, *Schimper*, 1324, in part! Mount Guna, 1000 ft., *Schimper*, 1333!

59. **H. cultrata,** *A. Rich. Tent. Fl. Abyss.* ii. 297. Tuber oblong, 14 lin. long, 9 lin. broad. Stem strong, $2\frac{1}{2}$ ft. high, leafy from the base to the middle. Leaves 3–5, oblong or elliptical, 10 in. long, $1\frac{3}{4}$ in. broad. Racemes elongate, 7 in. long, dense, many-flowered; rhachis sparingly pilose; bracts ovate, acute, longer than the ovary, sparingly pilose or spinulose-ciliate on the margin, 7–8 lin. long. Flowers medium-sized. Dorsal sepal oblong, acute, cucullate, keeled at the back, small; lateral much larger than the dorsal, oval, laterally apiculate. Petals bipartite, more or less densely pilose; posterior lobe linear-lanceolate, minute; anterior lobe broadly ovate at the base, narrowed, linear and curved above, more than twice as long as the posterior lobe. Lip trilobed; lobes linear-filiform; front lobe twice as long and broad as the side lobes; spur filiform below, clavate and obtuse above, 7–8 lin. long, shorter than the pedicels. Stigmatic processes slightly curved, parallel, cylindrical, rather long. Anther channels nearly as long as the stigmas. Rostellum longer than the anther, acute.—Reichb. f. in Walp. Ann. iii. 584; Kränzl. in Engl. Jahrb. xvi. 88.

Nile Land. Abyssinia: Tigre; north side of the Semayata Mountain, 8500 ft., *Schimper*, 554.

Only known to me from the published descriptions.

60. **H. cultriformis,** *Kränzl. ex Engl. Hochgeb. Fl. Trop. Afr.* 181 (*name only*); *Kränzl. in Engl. Jahrb.* xvi. 89. Tuber ovate, 14 lin. long, 9 lin. broad. Stem $2\frac{1}{2}$–$2\frac{3}{4}$ ft. high, leafy. Leaves 4–5, subdistichous, oblong, acute, plicate, canaliculate, $3\frac{1}{2}$ in. long, 8–14 lin. broad, the upper decreasing to the bracts. Racemes lax, many-flowered. Bracts lanceolate, acuminate, shorter than the pedicels. Pedicels 10 lin. long. Flowers conspicuous. Sepals $3\frac{1}{2}$–4 lin. long. Petals bipartite; anterior lobe 5 lin. long, caudate from a rounded base, $1\frac{1}{2}$–2 lin. broad, suddenly contracted into a curved linear process. Lip with the front lobe truncate at the apex, slightly longer than the spur; spur 8 lin. long. Stigmatic processes deflexed, capitate. Anther channels as long as the stigmas. Rostellum subulate, rather longer than the anther.—Schweinf. in Bull. Herb. Boiss. ii. App. ii. 88.

Nile Land. Abyssinia: Tigre; mountains at Mettgalo, 6600 ft., *Schimper*,

548; mountains near Amba Sea, 7500 ft., *Schimper*. Eritrea: Mt. Alamkale, near Aidereso, 6000 ft., *Schweinfurth*, 1798.

Only known to me from the original description.

61. **H. robusta,** *Welw. ex Reichb. f. in Flora*, 1867, 102. Stem 4 ft. high, densely foliaceous. Leaves oblong-ovate, acute, $4\frac{1}{2}$–$9\frac{1}{2}$ in. long, $1\frac{1}{2}$–2 in. broad, dense, erect, glaucous. Racemes cylindrical, many-flowered, $1\frac{1}{4}$ ft. long. Bracts oblong-lanceolate, shorter than the ovary, 8–11 lin. long. Flowers medium-sized. Dorsal sepal reflexed, oblong, acute, $2\frac{1}{2}$ lin. long; lateral much larger than the dorsal, reflexed, obliquely acute, $3\frac{1}{2}$ lin. long. Petals bipartite; lobes ligulate or lanceolate, acute; anterior lobe sometimes obtuse. Lip simple, linear, acute; spur cylindric-filiform, acute, $\frac{1}{2}$ as long as the pedicels. Stigmatic processes rough or ciliate, $1\frac{1}{2}$ lin. long; apex capitate. Anther channels as long as the stigmas. Rostellum triangular, acute. —Kränzl. in Engl. Jahrb. xvi. 75.

Lower Guinea. Angola: Golungo Alto; Sobato de Quibanga, among brushwood, rare and local, *Welwitsch*, 695!

62. **H. Bongensium,** *Reichb. f. Otia Bot. Hamb.* i. 58. Plant about 1 ft. high. Tuber "the size of a sparrow's egg." Leaves 5–10, ovate-lanceolate, acute, cauline, 1–$2\frac{1}{2}$ in. long, 5–6 lin. broad. Scapes 13 in. high; racemes $5\frac{1}{2}$ in. long, dense, many-flowered. Bracts lanceolate, aristate, 4–6 lin. long. Pedicels 3–4 lin. long. Flowers 5–$5\frac{1}{2}$ lin. diam. Dorsal sepal elliptical, acute; lateral oblong, acute, trinerved. Petals bipartite; posterior lobe linear-lanceolate, a little shorter than the dorsal sepal; anterior lobe minute. Lip tripartite; lobes lanceolate, acute; side lobes twice as narrow and short as the front lobe; spurs slightly curved, slightly thickened at the apex, rather longer than the pedicel. Stigmatic processes a little dilated at the apex. Anthers very broad; channels as long as the stigmas. Rostellum very broad, slightly shorter than the anther.—Kränzl. in Engl. Jahrb. xvi. 109.

Nile Land. British East Africa: Bongo; Ghattas, in swamps among grass, *Schweinfurth*, 1974.

Only known to me from the published descriptions, which, however, do not agree in some details.

63. **H. ruwenzoriensis,** *Rendle in Journ. Bot.* 1895, 280. Plant stout, about $2\frac{1}{2}$ ft. high, leafy below the middle. Leaves elliptic-oblong or ovate-oblong, obtuse or apiculate, sheathing, amplexicaul, 3–$4\frac{1}{2}$ in. long, 1–$1\frac{1}{4}$ in. broad, decreasing upwards into the bracts. Racemes 9 in. long, dense. Bracts ovate-lanceolate, acuminate, 7–12 lin. long. Pedicels 1–$1\frac{1}{4}$ in. long. Dorsal sepal ovate, obtuse, 3 lin. long; lateral obliquely and broadly obovate, laterally apiculate, 5 lin. long. Petals bipartite; posterior lobe broadly ligulate or oblong-ligulate, suddenly acute at the apex; anterior lobe as long as but narrower than the posterior, more or less lanceolate, curved, acuminate, 2 lin. long. Lip tripartite; side lobes linear, short; front

lobe linear, obtuse, $5\frac{1}{2}$ lin. long, broader than the side lobes; spur 10–11 lin. long, slender, suddenly inflated at the apex. Stigmatic processes slender, capitate, $3\frac{1}{2}$ lin. long. Anther channels slender, curved, as long as the stigmas. Rostellum subulate, $\frac{1}{2}$ lin. long.

Nile Land. British East Africa: Ruwenzori; Wimi, 7000 ft., *Scott-Elliot*, 7923!

Near *H. ceratopetala*, A. Rich., but it has not the long anterior petal-lobe of that species.

64. **H. insignis,** *Rolfe.* Plant 10–12 in. high, stout. Tubers ovoid-oblong. Leaves cauline, sheath-like, elliptic-oblong, subacute or apiculate, concave, $1\frac{1}{4}$–2 in. long. Racemes $2\frac{1}{2}$–$3\frac{1}{2}$ in. long, dense. Bracts ovate, subacute or apiculate, 1–$1\frac{1}{4}$ in. long. Pedicels $\frac{1}{2}$–$\frac{3}{4}$ in. long. Dorsal sepal ovate, acute, 6 lin. long; lateral falcate-ovate, acute, 9 lin. long. Petals bipartite; posterior lobe falcate-linear, acute, as long as the dorsal sepal; anterior lobe linear, acute, half as long as the posterior. Lip tripartite, velvety; side lobes subspathulate, subobtuse, 7 lin. long; front lobe subspathulate-oblong, subobtuse, 11 lin. long; spur clavate, 7 lin. long. Stigmatic processes oblong, truncate, 3 lin. long. Anther channels slender, as long as the stigmas. Rostellum very shortly triangular, broader than long, obtuse.

Mozamb. Dist. British Central Africa: Fwambo, south of Lake Tanganyika, *Carson*, 2! 9!

A most distinct and remarkable species, without any very near allies. There is no trace of radical leaves on the specimens, which suggests that they may wither before the spikes appear, for the sheath-like cauline ones seem altogether inadequate for the support of such a plant.

65. **H. simensis,** *Reichb. f. in Linnæa*, xxii. 859. Tuber ovoid, $\frac{3}{4}$ in. long, $4\frac{1}{2}$ lin. broad. Stem $6\frac{1}{2}$–15 in. high, leafy at the base. Leaves 5–6, oblong, acute, $3\frac{1}{4}$–$3\frac{1}{2}$ in. long, 14 lin. broad, minutely papillose above and on the margin, sheathing below, the upper decreasing to the bracts. Racemes dense-flowered. Bracts acute or acuminate, longer than the pedicels, upper side and margin minutely papillose. Pedicels about 5 lin. long. Flowers $4\frac{1}{2}$ lin. diam. Dorsal sepal small, oblong, acute, cucullate; lateral deflexed, semiorbicular-ovate, acute, $2\frac{1}{2}$ lin. long and broad. Petals bipartite; posterior lobe lanceolate, acute, with papillose margin; anterior lobe short, retuse, bilobed, with minute acute lobes, appressed to the column. Lip trilobed; side lobes short, lanceolate, acute; front lobe long, lanceolate, obtuse, a little thickened; spur very obtuse, about 4 lin. long. Stigmatic processes straight; apex dilated and retuse. Anther channels ascending, a little longer than the stigmas. Staminodes filiform, curved.—Reichb. f. in Walp. Ann. iii. 583; Kränzl. in Engl. Jahrb. xvi. 90.

Nile Land. Abyssinia: Semen Prov., *Rüppell*, *Schimper*, 607. Begemeder; Jan Meda, 8500 ft., *Schimper*, 1324, in part.

Only known to me from the published descriptions.

66. **H. pantothrix,** *Kränzl. ex Engl. Hochgeb. Fl. Trop. Afr.* 181 (*name only*); *Kränzl. in Engl. Jahrb.* xvi. 89. Plant strong, $1\frac{1}{2}$ ft. high, leafy near the base, with sheathing bracts above. Leaves 3–4, oblong, acute, $3\frac{1}{2}$ in. long, 14 lin. broad, base amply sheathing; sheaths dense, ovate, acute, pellucid. Racemes dense, many-flowered. Bracts sparsely or densely pilose. Pedicels 7 lin. long. Flowers medium-sized, more or less densely pilose except the lip and spur. Dorsal sepal oblong, cucullate, carinate, small; lateral much larger than the dorsal, reflexed, cucullate, obovate, acute, $2\frac{1}{2}$ lin. long and broad. Petals bipartite; posterior lobe with a very broad rounded base, irregularly ovate, acute; anterior lobe nearly straight, reduced in front to a pair of minute, acute teeth, of which the upper is the larger. Lip clawed, linear, thick, acute; side lobes reduced to rectangular teeth; spur filiform, clavate, 6 lin. long. Stigmatic processes straight, spathulate, obliquely truncate in front. Anther channels slightly shorter than the stigmas; apex attenuate. Staminodes rounded, tuberculate. Rostellum triangular, acute, a little longer than the ovary.

Nile Land. Abyssinia, *Schimper*, 1324, in part!

67. **H. Welwitschii,** *Reichb. f. in Flora*, 1865, 179. Plant $1\frac{1}{4}$–$2\frac{1}{4}$ ft. high. Leaves about 3, subradical, linear, subobtuse, conduplicate to the apex, $2\frac{1}{2}$–7 in. long. Scapes 1–$2\frac{1}{4}$ ft. high; sheaths about 5, decreasing upwards into the bracts. Racemes lax, 12- to many-flowered, $3\frac{1}{2}$–12 in. long. Bracts ovate-lanceolate, acuminate, 4–8 lin. long. Pedicels 8–9 lin. long. Dorsal sepal oblong, obtuse, $2\frac{1}{2}$ lin. long; lateral obliquely obovate-oblong, apiculate, 3 lin. long, about as broad. Petals bipartite; posterior lobe linear-filiform, 3 lin. long; anterior lobe obovate-oblong, subobtuse, $2\frac{1}{4}$ lin. long. Lip tripartite; side lobes oblong, subobtuse, $2\frac{1}{4}$ lin. long; front lobe linear, filiform, $5\frac{1}{2}$ lin. long; spur $6\frac{1}{2}$ lin. long, filiform below, clavate-inflated at the apex. Stigmatic processes subclavate-linear, straight, $1\frac{3}{4}$ lin. long. Anther channels 2 lin. long, curved at the apex. Rostellum triangular, subulate, 1 lin. long.—Kränzl. in Engl. Jahrb. xvi. 68.

Lower Guinea. Angola: Huilla; between Lopollo and Humpata, in pastures near rivers, rather rare, *Welwitsch*, 721!

68. **H. anaphysema,** *Reichb. f. in Flora*, 1867, 101. Tuber spherical-ovoid, villous, 5–7 lin. long. Stem slender, 10–12 in. long. Leaves 4, linear, acuminate, rosulate, 4 in. long, $1\frac{1}{2}$ lin. broad; upper distant, sheath-like. Racemes 2 in. long, about 8-flowered. Bracts cuneate-oblong, acuminate, shorter than the pedicels, 2–3 lin. long. Dorsal sepal oblong; lateral oblong-ovate, very oblique, laterally apiculate. Petals bipartite; posterior lobe linear, short, subulate, minutely papillose; anterior lobe longer and broader than the posterior, subfalcate, smooth. Lip trilobed; lobes linear, acuminate; side lobes shorter than the front; spur cylindrical, inflated and uncinate

at the apex. Stigmatic processes cylindrical. Anther channels longer than the stigmas.—Kränzl. in Engl. Jahrb. xvi. 81.

Lower Guinea. Angola: Huilla; between Humpata and Nene, in wet bushy pastures, local, *Welwitsch*, 744!

Remarkable for the inflated spur, which is suddenly curved below the swelling.

69. **H. humilior,** *Reichb. f. Otia Bot. Hamb.* ii. 100. Plant 5–10 in. high. Leaves few, cauline, linear-lanceolate, acute, somewhat recurved, 2–4 in. long. Racemes 2–3 in. long, 3–20-flowered. Bracts ovate-lanceolate, subacuminate, 6–9 lin. long. Pedicels 7–9 lin. long. Dorsal sepal elliptic-oblong, obtuse, 3 lin. long; lateral obliquely cuneate-oblong or obovate-oblong, laterally apiculate, 4 lin. long. Petals bipartite; posterior lobe linear-filiform, curved, $2\frac{1}{4}$–$2\frac{1}{2}$ lin. long; anterior lobe oblong-lanceolate, subobtuse, with an obscure tooth on either side below the apex, $4\frac{1}{2}$–5 lin. long. Lip tripartite; lobes linear-filiform, slightly curved; side lobes $4\frac{1}{2}$ lin. long; front lobe $5\frac{1}{2}$ lin. long; spur 9–10 lin. long, filiform below, clavate at the apex. Stigmatic processes clavate, truncate, $1\frac{3}{4}$ lin. long. Anther channels slightly longer than the stigmas. Rostellum subulate, curved, 1 lin. long.—Kränzl. in Engl. Jahrb. xvi. 79.

Nile Land. Abyssinia: Begemeder; Gerra Abuna Tekla, on the River Reb, 8000 ft., *Schimper*, 1373!

70. **H. martialis,** *Reichb. f. Otia Bot. Hamb.* ii. 99. Plant medium-sized. Leaves not seen. Racemes 4 in. long, many-flowered. Bracts lanceolate, acuminate, 3–5 lin. long. Pedicels 5–6 lin. long. Dorsal sepal elliptic-oblong, subobtuse, concave, 3 lin. long; lateral falcate-oblong, subobtuse or apiculate, as long as the dorsal. Petals bipartite; posterior lobe linear-lanceolate, acuminate, $2\frac{1}{2}$ lin. long; anterior lobe shorter and less acuminate than the posterior. Lip tripartite; lobes linear, acute; side lobes falcately incurved, $1\frac{1}{2}$ lin. long; spur $6\frac{1}{2}$ lin. long, filiform below, subclavate near the apex. Stigmatic processes stout, clavate-capitate, $\frac{3}{4}$ lin. long. Anther channels rather longer than the stigmas. Rostellum subulate, $\frac{3}{4}$ lin. long.—Kränzl. in Engl. Jahrb. xvi. 111.

Mozamb. Dist. German East Africa: Rovuma River, *Kirk!*

71. **H. ingrata,** *Rendle in Journ. Bot.* 1895, 279. Plant $1\frac{1}{4}$–$1\frac{1}{2}$ ft. high, leafy below. Leaves linear, $1\frac{1}{4}$ in. or more long, passing into acuminate sheaths above. Racemes 4 in. long, many-flowered. Bracts lanceolate, acuminate, 5–8 lin. long. Pedicels 7–9 lin. long. Dorsal sepal elliptic-oblong, subobtuse, $2\frac{1}{4}$ lin. long; lateral obliquely cuneate-oblong, laterally apiculate, 3 lin. long. Petals bipartite; posterior lobe linear-filiform, $2\frac{1}{4}$ lin. long; anterior lobe linear-lanceolate, acuminate, $3\frac{1}{2}$ lin. long. Lip tripartite; lobes linear; side lobes $3\frac{1}{2}$ lin. long; front lobe 4 lin. long; spur cylindrical, 10–11 lin. long, slightly thickened above. Stigmatic processes capitate, $1\frac{1}{2}$ lin. long. Anther channels

slender, scarcely as long as the stigmas. Rostellum subulate, ½ lin. long.

Nile Land. British East Africa: Ruwenzori, 9000 ft., *Scott-Elliot*, 7198, in part!

72. **H. culicifera,** *Rendle in Journ. Bot.* 1895, 278. Plant 1–1¼ ft. high, with very few leaves below, and a few lax sheaths above. Leaves linear from a sheathing base, 4–5 in. long, 4 lin. broad. Racemes 2½–3 in. long, rather lax. Bracts ovate-lanceolate, acute, 6–7 lin. long. Pedicels 7–9 lin. long. Dorsal sepal ovate, subacute, 2½ lin. long; lateral reflexed, obliquely cuneate-oblong, laterally apiculate, 3 lin. long. Petals bipartite; posterior lobe linear-filiform, 2½ lin. long; anterior lobe linear-lanceolate, 4 lin. long. Lip tripartite; lobes narrowly linear; side lobes 4 lin. long; front lobe 5 lin. long; spur 8 lin. long, slender below, clavate above. Stigmatic processes clavate-linear, 1½ lin. long. Anther channels slender, a little shorter than the stigmas. Rostellum triangular, subacute, ½ lin. long.

Nile Land. British East Africa: Ruwenzori, 6000 ft., *Scott-Elliot*, 7854!

73. **H. buettneriana**, *Kränzl. in Engl. Jahrb.* xvi. 68. Plant slender, 20 in. or more high; base not seen. Leaves cauline, lanceolate, acute, 4½–6 in. long, 1½ in. broad, very membranous, the upper decreasing to the bracts. Racemes lax, about 20-flowered, Bracts ovate-lanceolate, acuminate, 4–5 lin. long. Pedicels 7–9 lin. long. Flowers green, among the smallest of the genus. Dorsal sepal oblong, obtuse, cucullate, reflexed, 2–2½ lin. long; lateral deflexed, as long as but slightly narrower than the dorsal, suboblique. Petals bipartite from a simple base; posterior lobe linear, acute, subfalcate; anterior lobe half as broad as the posterior. Lip tripartite from an entire base; lobes subequal, much like the anterior lobe of the petals; spur filiform below, slightly thickened and acuminate above, ½ in. long. Stigmatic processes flat, deflexed, excavated below, appressed to the lip, but free. Anthers bipartite; channels upright, as long as the stigmas. Rostellum very minute, triangular.

Upper Guinea. Togo: Bismarckburg, *Büttner*, 213, 288.

Only known to me from the original description.

74. **H. cataphysema,** *Reichb. f. in Flora*, 1867, 101. Stem 12–22 in. high, leafy. Leaves linear-lanceolate or linear, acuminate, appressed to the stem, 3–6 in. long, 2–4 lin. broad, decreasing upwards. Racemes elongate, many-flowered, 3–11 in. long, rather lax. Bracts ovate, acute, 3–3½ lin. long. Pedicels 5 lin. long. Flowers greenish, somewhat red in the bud. Dorsal sepal narrowly rhomboid; lateral semiovate, suboblique, reflexed; apiculus lateral. Petals bipartite; lobes linear, acute or acuminate; anterior lobe a little longer than the posterior. Lip tripartite; lobes linear, acute; side lobes shorter than the front lobe; spur filiform, inflated at the apex, enclosed within the bract, about as long as the pedicel. Stigmatic processes straight,

thickened, capitate. Anther channels a little longer than the stigmas. —Kränzl. in Engl. Jahrb. xvi. 76.

Lower Guinea. Angola: Huilla; between Lopollo and Ohay, in humid wooded pastures, *Welwitsch*, 722! Morro de Monnino, *Welwitsch*, 743!

75. **H. Peltastes,** *Reichb. f. Otia Bot. Hamb.*, ii. 99. Plant tall. Stem over 3 ft. high, with two sheaths at the base. Leaves 6–7 on the lower part of the stem, lanceolate, acuminate, nerved below. Racemes elongate, lax, many-flowered. Bracts ligulate, apiculate, scarcely half as long as the pedicellate ovaries. Dorsal sepal ligulate, subacute; lateral obliquely obovate, apiculate in the superior angle. Petals bipartite; posterior lobe lanceolate, 2-nerved; anterior lobe narrower than the posterior, short, nerveless. Lip tripartite; lobes lanceolate; side lobes semioblong, shorter than the front; spur filiform, clavate, nearly as long as the pedicels. Stigmatic processes verrucose; apex peltate, truncate. Anther channels ascending. Rostellum uncinate. —Kränzl. in Engl. Jahrb. xvi. 74.

Nile Land. Eritrea: Lalamba, near Keren, *Steudner*.

Only known to me from the original description. Reichenbach says that the type specimen is at Berlin, where, however, Kränzlin has been unable to find it.

76. **H. chirensis,** *Reichb. f. Otia Bot. Hamb.* ii. 99. Plant over $1\frac{1}{2}$ ft. high. Leaves 4, linear-lanceolate, distant, elongate, the upper decreasing to the bracts. Racemes rather long, lax-flowered. Bracts lanceolate, shorter than the pedicels. Dorsal sepal oblong; lateral cuneate-obovate, apiculate on the upper margin. Petals bipartite; posterior lobe linear; anterior lobe linear-lanceolate, nearly as long as the posterior. Lip with filiform-subulate, subequal lobes; spur filiform, a little broader at the apex, not as long as the pedicels. Anther channels slender, arcuate. Stigmatic processes produced, straight; apex much broader and retuse.—Kränzl. in Engl. Jahrb. xvi. 107.

Nile Land. Abyssinia: Shire District, *Quartin-Dillon*.

Only known to me from the original description.

77. **H. Holstii,** *Kränzl. in Engl. Jahrb.* xix. 246. Plant slender, about 2 ft. high, base squamate, densely foliate above. Leaves about 10, oblong or lanceolate, more or less acuminate, with large loose sheaths, the largest 6 in. long, $1\frac{1}{4}$–2 in. broad. Racemes 10 in. long, lax; apex slightly nodding. Bracts ovate-lanceolate, acuminate, shorter than the pedicel. Flowers yellowish-green, 1 in. diameter. Dorsal sepal oblong, obtuse, cucullate; lateral deflexed, ovate, obtuse, suboblique. Petals bipartite; posterior lobe ligulate, obtuse, hidden under the dorsal sepal; anterior lobe filiform, porrect, distinctly longer than the posterior. Lip tripartite, with very narrow equal lobes; spur filiform, curved, acute, as long as the pedicel, 5 lin. long. Stigmatic processes laterally compressed. Anther channels ascending, as long as the stigmas. Rostellum acuminate, much hidden under the anther.

Mozamb. Dist. German East Africa: Usambara, in forests, *Holst*, 528.

Only known to me from the original description.

78. **H. polyantha,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 152. Stem over 3 ft. high, strong, with 4–5 leaves about the middle. Leaves fairly large, cuneate-oblong or lanceolate, acuminate or acute. Racemes very long, 80- or more-flowered. Bracts minute, aristate, as long as the curved pedicel. Dorsal sepal ovate, acute, cucullate; lateral oblong, obtuse, or subacute, deflexed. Petals bipartite, with rounded sinus; posterior lobe linear-falcate; anterior lobe filiform, longer than the posterior. Lip as long as the petals, with filiform lobes; front lobe a little longer than the side lobes; spur much curved, fusiform, acute from the narrow mouth, a little shorter than the pedicel, 5 lin. long. Column short, broad. Stigmatic processes retuse, but not dilated. Anther channels ascending, as long as the stigmas. Rostellum $2\frac{1}{2}$ lin. long.—Kranzl. in Engl. Jahrb. xxii. 19.

Nile Land. British East Africa: region W. of Lake Albert Nyanza, 4200 ft., *Stuhlmann*, 2679.

Only known to me from the description, but said to be allied to *H. sochensis*, Reichb. f.

79. **H. ndiana,** *Rendle in Journ. Linn. Soc.* xxx. 393. Plant 22 in. high, with a stout stem, and 5–6 leaves below. Leaves broadly linear, acute, 5–6 in. long, 4–6 lin. broad, sheathing and amplexicaul at the base, the upper decreasing to the bracts. Spike 6 in. long, lax, many-flowered. Bracts oval-lanceolate, acute, the lowest 1 in. long. Pedicels 13 lin. long. Dorsal sepal oval, $2\frac{1}{4}$ lin. long; lateral reflexed, obliquely subrhomboid, apiculate near the apex. Petals bipartite; posterior lobe filiform-linear, 2 lin. long; anterior lobe linear-lanceolate, 4 lin. long. Lip tripartite; side lobes linear-lanceolate, subfalcate, 4 lin. long; front lobe narrowly linear, $4\frac{1}{2}$ lin. long; spur slender, a little broader below, 10 lin. long. Stigmatic process stout, capitate, $1\frac{1}{2}$ lin. long. Anther channels slender, somewhat recurved, a little longer than the stigmas. Rostellum subulate, as long as the anther.

Nile Land. British East Africa: Ndi Mountains, 4400 ft., in Acacia scrub, *Gregory!*

80. **H. sochensis,** *Reichb. f. Otia Bot. Hamb.* ii. 100. Plant tall, over 2 ft. high. Lower leaves not seen, upper reduced ones oblong-linear. Racemes 1 ft. long, many-flowered. Bracts lanceolate or ovate-lanceolate, acuminate, 6–8 lin. long. Pedicels 6–8 lin. long. Dorsal sepal elliptic-lanceolate, subacute, $2\frac{1}{2}$ lin. long; lateral obliquely cuneate-oblong, apiculate near the apex, 4 lin. long. Petals bipartite; posterior lobe linear-filiform, falcate, $1\frac{1}{2}$ lin. long; anterior lobe lanceolate, acute, curved at the apex, $3\frac{1}{2}$ lin. long. Lip tripartite; lobes linear, subobtuse, subequal, $4\frac{1}{2}$ lin. long; spur 9 lin. long, slender below, slightly thickened above. Stigmatic processes stout, clavate-capitate, $1\frac{1}{2}$ lin. long. Anther channels slender, curved, slightly longer than the stigmas. Rostellum linear, 1 lin. long.—Kränzl. in Engl. Jahrb. xvi. 108.

Nile Land. British East Africa: Rabai Hills, near Mombasa, *Taylor!*
Mozamb. Dist. British Central Africa: near Mount Sochi, 3000 ft., *Kirk!*

81. **H. Kilimanjari,** *Reichb. f. Otia Bot. Hamb.* ii. 119. Plant 1½ ft. or more high. Radical leaves not seen, a few cauline lanceolate-linear, acute, 2–2½ in. long. Racemes 6 in. long, many-flowered. Bracts lanceolate, acuminate, 5–9 lin. long. Pedicels 7–10 lin. long. Dorsal sepal elliptic-oblong, subobtuse or apiculate, 3 lin. long; lateral oblique, semiovate, subobtuse or apiculate, 3½ lin. long. Petals bipartite; lobes ovate-lanceolate, subacute; posterior lobe 2½ lin. long; anterior lobe a little smaller than the posterior. Lip trilobed; side lobes linear-lanceolate, acute, 3 lin. long; front lobe linear, 4 in. long; spur 7–8 lin. long, filiform below, subclavate above. Stigmatic processes clavate-capitate, stout, 1¼ lin. long. Anther channels stout, 1¾ lin. long. Rostellum triangular-subulate, 1¼ lin. long.—Kränzl. in Engl. Jahrb. xvi. 75.

Mozamb. Dist. German East Africa: around Kilimanjaro, *New!* Usambara; near Maurui, on the Pangani River, *Volkens*, 2371!

82. **H. huillensis,** *Reichb. f. in Flora*, 1865, 179. Plant 2–2½ ft. high. Leaves cauline, linear-lanceolate, acute, 3–6 in. long. Racemes 4–6 in. long, many-flowered. Bracts ovate-lanceolate, acuminate, 6–10 lin. long. Pedicels 8–10 lin. long. Flowers white. Dorsal sepal elliptic-oblong, subobtuse, 2¾ lin. long; lateral obliquely cuneate, oblong, apiculate, ⅓ below the apex. Petals bipartite; posterior lobe linear-filiform, 2½–3 lin. long; anterior lobe 4½–5 lin. long, linear-filiform from a lanceolate base. Lip tripartite; lobes linear; side lobes 4–5 lin. long; front lobe 5–6 lin. long; spur 10–11 lin. long, filiform, very slightly thickened towards the apex. Stigmatic processes capitate-clavate, 2 lin. long. Anther channels slender, as long as the stigmas. Rostellum narrowly triangular, ¾ lin. long.—Kränzl. in Engl. Jahrb. xvi. 78.

Lower Guinea. Angola: Malange, *Mechow*, 437. Huilla; near Lake Ivantala, towards Quilongues, *Welwitsch*, 724! near Catumbo, *Welwitsch*, 724B! between Monino and Ivantala, *Welwitsch*, 724C! Huilla, *Antunes*, 14!

83. **H. ichneumonea,** *Lindl. Gen. & Sp. Orch.* 313. Plant ¾–1¼ ft. high. Leaves cauline, linear, acute, 2–3 in. long, 1–2 lin. broad. Racemes 2–4 in. long, very lax. Bracts lanceolate, acute, 3–4 lin. long. Pedicels slender, 9–10 lin. long. Dorsal sepal oblong-lanceolate, subobtuse, 1¾ lin. long; lateral obliquely suborbicular-obovate, strongly apiculate, about the middle, 2–2¼ lin. long. Petals bipartite, posterior lobe falcate-linear, acute, 1¼ lin. long; anterior lobe fleshy, falcate-linear, subobtuse, 2 lin. long. Lip tripartite; lobes linear, 2½–3 lin. long; spur 5 lin. long, filiform below, apex subclavate. Stigmatic processes clavate, 2 lin. long. Anther channels slender, as long as the stigmas. Rostellum subulate, ¾ lin. long.—*Orchis ichneumonea*, Sw. in Vet. Akad. Handl. Stockh. xxi. (1800) 207 (name only); Pers. Syn. Pl. ii. 506.

Upper Guinea. Sierra Leone; without precise locality, *Afzelius!*

84. **H. confusa,** *Rolfe.* Plant 1½–2½ ft. high. Leaves 3–4, on the lower part of the stem, lanceolate-linear, subacute, 3–6 in. long, 3–4 lin. broad. Racemes 5 in. long, lax. Bracts oblong-lanceolate, subacute, 3–5 lin. long. Pedicels 6–8 lin. long. Flowers green. Dorsal sepal elliptic-oblong, obtuse, 2½ lin. long; lateral obliquely cuneate-obovate, apiculate above the middle, 3½ lin. long. Petals bipartite; posterior lobe linear, subobtuse, 2 lin. long; anterior lobe lanceolate, acuminate, 4½ lin. long. Lip tripartite; lobes linear; side lobes curved at the apex, 3¼ lin. long; front lobe stouter than and nearly twice as long as the side lobes; spur 4–6 lin. long, clavate with a narrow base. Stigmatic processes clavate, 2 lin. long. Anther channels slender, 2½ lin. long. Rostellum subulate, 1–1¼ lin. long; apex recurved.—*H. ichneumonea,* Reichb. f. in Flora, 1865, 179 (not Lindl.); Kränzl. in Engl. Jahrb. xvi. 136.

Lower Guinea. Gaboon: Sibange Farm, *Soyaux,* 346! Angola: Pungo Adongo; near the River Pedra de Sougue, in fissures of rocks, *Welwitsch,* 681!

A more robust plant than *H. ichneumonea,* Lindl., with which it has been confused; the leaves broader, the flowers much larger, and the spur much more strongly clavate.

85. **H. Vogelii,** *Ridl. in Journ. Bot.* 1886, 295. Tubers 2, rather large, globose, pedicelled, 7–11 lin. long. Plant strict, erect, 1¾–2¼ ft. high. Leaves narrowly lanceolate, strict, acuminate, 6–7 in. long, ½ in. broad, remote. Racemes lax, 6–10 in. long. Flowers many, pedicelled, nearly white. Bracts lanceolate, acute, 4–6 lin. long. Pedicels 7–9 lin. long. Dorsal sepal erect, short, lanceolate, cucullate; lateral reflexed, as long as the ovary, obcuneate, oblique, obtuse; apex slightly hooked. Petals bifid; lobes short, linear-lanceolate, acuminate; posterior lobe slightly longer than the anterior. Lip trilobed, short, scarcely as long as the stigmas; lobes narrowly linear, obtuse; front lobe a little longer and broader than the side lobes; spur pendulous, scarcely longer than the ovary, ½ in. long, cylindrical, filiform, truncate, obtuse, scarcely clavate. Stigmatic processes 4–5 lin. long, porrect; apex clavate-incrassate, truncate. Anther channels short, narrow from a broader base.—Kränzl. in Engl. Jahrb. xvi. 65.

Upper Guinea. Bornu; Mandara Dist., in a marshy mountain meadow near Mora, South of Lake Chad, *Vogel,* 40!

86. **H. schimperiana,** *Hochst. ex A. Rich. Tent. Fl. Abyss.* ii. 295. Plant about 1½ ft. high. Leaves cauline, linear or oblong-linear, acute, 3–6 in. long. Racemes 6 in. long, lax. Bracts ovate-lanceolate, subacuminate, 7–9 lin. long. Pedicels 10–18 lin. long. Dorsal sepal elliptic-oblong, subobtuse, 2½–4 lin. long; lateral obliquely cuneate-oblong, apiculate above the middle, 3¼–5 lin. long. Petals bipartite; posterior lobe linear-filiform, 2½–3½ lin. long; anterior lobe subulate-linear, a little broader, 5–9 lin. long. Lip tripartite; lobes linear-filiform, 4½–7 lin. long; front lobe rather longer and broader than the side lobes; spur 7 lin. long, filiform below, clavate above. Stigmatic processes clavate-capitate, 2½–3½ lin. long. Anther channels slender,

as long as the stigmas. Rostellum triangular-subulate, curved, 1¼ lin. long.—Reichb. f. in Walp. Ann. iii. 583; Kränzl. in Engl. Jahrb. xvi. 87. *H. anomala*, Lindl. ex Kränzl. in Engl. Jahrb. xvi. 206.

Nile Land. Abyssinia: Shire prov., *Quartin-Dillon & Petit*, 106! Semen; near Jenausa, *Schimper* (ex *A. Richard*). Tigre; near Jomara, *Schimper*, 1210! and without precise locality, *Plowden! Schimper*, 1378! *Schimper*, 703!

H. anomala, Lindl., which Kränzlin refers to a distinct section of the genus, is simply an abnormal peloriate state of this species. The original specimen has a trilobed dorsal sepal and a simple lip, which suggests a displacement of the parts. The petals also are broad and very shortly bilobed. A second specimen in Sir William Hooker's Herbarium, authenticated by Lindley, is in an intermediate state. Kränzlin's section, *Anomalæ*, therefore falls to the ground.

87. **H. genuflexa,** *Rendle in Journ. Bot.* 1895, 279. Plant 1¾ ft. high, with several leaves below. Leaves lanceolate, acute, amplexicaul, the uppermost decreasing into the bracts, basal leaves not seen. Racemes 10 in. long, many-flowered. Bracts lanceolate, acuminate, 5–10 lin. long. Pedicels 8–14 lin. long. Dorsal sepal elliptic-oblong, obtuse, 3¼ lin. long; lateral obliquely and broadly obovate, laterally apiculate, 4 lin. long. Petals bipartite; posterior lobe subulate, 3¼ lin. long; anterior lobe linear-lanceolate, acuminate, subfalcate, 7½ lin. long. Lip tripartite; lobes linear; side lobes 4½ lin. long; front lobe 6 lin. long, rather broader than the side lobes; spur 4½ lin. long, inflated above, spirally twisted below the inflated part, bent at right angles below the middle. Stigmatic processes slender, capitate, 3 lin. long. Anther channels curved, slender, about as long as the stigmas. Rostellum subulate, 1 lin. long.

Nile Land. British East Africa: East side of Ruwenzori, at Wimi, 7000 ft., *Scott-Elliot*, 7922!

Near *H. schimperiana*, Hochst., but distinguished by its sharply geniculate spur, in which character it recalls *H. anaphysema*, Reichb. f.

88. **H. Thomsoni,** *Reichb. f. in Journ. Linn. Soc.* xxi. 404. Plant 9–15 in. high. Leaves basal, oblong-lanceolate, subacute, 2–4 in. long, the upper reduced to acute sheaths. Racemes rather dense, 2–3½ in. long. Bracts oblong, acute, as long as the pedicels, margin and disc muriculate outside. Pedicels 7–9 lin. long. Dorsal sepal elliptic-lanceolate, obtuse, 3 lin. long; lateral very oblique, obtuse, strongly apiculate above the middle, 4 lin. long. Petals bipartite; posterior lobe linear, muriculate, as long as the dorsal sepal; anterior lobe obliquely lanceolate, rather longer than the posterior; margin minutely muriculate. Lip tripartite; side lobes lanceolate, acute, 4 lin. long; front lobe linear-filiform, somewhat curved in front, 5½ lin. long; spur 5 lin. long, cylindrical at the base, clavate above, apiculate. Stigmatic processes clavate, 2 lin. long. Anther channels subulate, curved at the apex, longer than the stigmas. Rostellum triangular-subulate, 1 lin. long.

Nile Land. British East Africa: Lykipia Plateau, 6000–8000 ft., *Thomson!*

89. **H. lykipiensis,** *Rolfe.* Plant 1¼–1½ ft. high, stout. Leaves linear-lanceolate, acuminate, 3–5 in. long. Racemes 4–5 in. long, dense, many-flowered. Bracts ovate-lanceolate, acuminate, 6–9 lin. long. Pedicels 9–11 lin. long. Dorsal sepal broadly elliptical, obtuse, 4 lin. long; lateral obliquely cuneate-obovate, strongly apiculate near the apex, 5 lin. long. Petals bipartite; posterior lobe linear-filiform, acute, 3 lin. long; anterior lobe narrowly lanceolate, acuminate, 5½ lin. long. Lip tripartite; lobes linear-filiform, acute, subequal, 5½ lin. long; spur 9 lin. long, cylindrical below, subclavate near the apex. Stigmatic processes clavate, 3 lin. long. Anther channels linear-filiform, sharply curved near the apex, rather longer than the stigmas. Rostellum triangular-subulate, 1 lin. long.

Nile Land. British East Africa: Lykipia Plateau, 6000–8000 ft., *Thomson!*

Nearly allied to the preceding, but a more robust plant with larger flowers and more elongated floral segments.

90. **H. ridleyana,** *Kränzl. ex Engl. Hochgeb. Fl. Trop. Afr.* 179 (*name only*); *Kränzl. in Engl. Jahrb.* xvi. 65. Tuber oblong. Stem about 2¾ ft. long, stout, often somewhat pilose, with scales at the very base, then leafy, sparingly squamate above. Leaves oblong, obtuse, the upper acute, 8–10 in. long, 2–2¼ in. broad; sheaths oblong, acuminate, scarious. Racemes many-flowered. Bracts broadly ovate, acute, as long as the ovary. Flowers medium-sized. Dorsal sepal small, oblong, acute, keeled behind; lateral much larger, obliquely cuneate-obovate, laterally apiculate, 3 lin. long, 2 lin. broad. Petals bipartite; lobes tooth-like, acute; anterior lobe smaller than the posterior. Lip unguiculate, nearly simple, linear, 5 lin. long; margin thick, incurved; base slightly dilated by minute teeth; spur as long as the lip, recurved, filiform, with inflated apex. Stigmatic processes straight, deflexed, capitate, marginate in front. Anther channels attenuate, scarcely as long as the stigmas. Rostellum narrowly filiform from a triangular base, longer than the anther. Staminodes falcate-oblong, obtuse.

Nile Land. Abyssinia: *Schimper.*

Only known to me from the original description.

91. **H. hochstetteriana,** *Kränzl. ex Engl. Hochgeb. Fl. Trop. Afr.* 180. Plant 10–15 in. high. Leaves cauline, linear, subobtuse, 3–6 in. long, 2½–4 lin. broad. Racemes lax, 2½–4½ in. long. Bracts ovate-lanceolate, acuminate, 5–7 lin. long, 2–2½ lin. broad. Pedicels 9–10 lin. long. Dorsal sepal oblong-lanceolate, subobtuse, 2½ lin. long; lateral obliquely cuneate-obovate, apiculate ⅓ below the apex, 3½ lin. long, 1¾ lin. broad. Petals bipartite; posterior lobe linear, acute, 2 lin. long; anterior lobe lanceolate, acuminate, 4 lin. long, ¾ lin. broad. Lip tripartite; lobes linear; side lobes 4 lin. long; front lobe 5 lin. long; spur ¾ in. long, filiform below. Stigmatic processes clavate, truncate, stout, 2 lin. long, fusiform-clavate at the apex. Anther channels slightly longer than the stigmas, curved at the apex. Rostellum triangular, subulate, ¾ lin. long.—Kränzl. in Engl. Jahrb. xvi. 73.

H. replicata, Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 296 (not A. Rich.); Reichb. f. in Walp. Ann. iii. 584.

Nile Land. Abyssinia: Tigre; Mount Sholoda, near Adowa, *Quartin-Dillon*, about Adowa, *Schimper*. Mountains near Jelajeranne, on the Tacazze River, *Schimper*, 1645!

92. **H. pedicellaris,** *Reichb. f. Otia Bot. Hamb.* ii. 100. Plant about $1\frac{1}{4}$ ft. high. Leaves cauline, few, linear-lanceolate, acute, 3–$5\frac{1}{2}$ in. long, $2\frac{1}{2}$–$3\frac{1}{2}$ lin. broad. Racemes 4–5 in. long. Bracts lanceolate, acuminate, 8–9 lin. long. Pedicels 9–11 lin. long. Dorsal sepal elliptic-oblong, subobtuse, $2\frac{1}{4}$ lin. long; lateral obliquely obovate-oblong, apiculate at the upper angle, $3\frac{1}{2}$ lin. long. Petals bipartite; posterior lobe linear-filiform, $2\frac{1}{2}$ lin. long; anterior lobe 4–$4\frac{1}{2}$ lin. long, stouter and broader at the base. Lip tripartite; lobes linear-filiform, 4 lin. long, subequal; spur 9–10 lin. long, filiform, acute, slightly thickened and curved near the apex. Stigmatic processes clavate, apiculate, 2 lin. long. Anther channels slender above, as long as the stigmas. Rostellum subulate, incurved, 1 lin. long.—Kränzl. in Engl. Jahrb. xvi. 78; Kränzl. in Engl. Pfl. Ost-Afr. C. 152.

Nile Land. Abyssinia: Dembia Plain, North of Lake Tana, 5800 ft., *Schimper*, 1369!

Mozamb. Dist. German East Africa: Kilimanjaro, Marangu, 5000 ft., *Volkens*, 2321!

Very nearly allied to the preceding species, though placed in a different section by Kränzlin.

93. **H. ranicolorata,** *Reichb. f. ex Oliv. in Trans. Linn. Soc. ser.* 2, ii. 350 (*name only*, "*raricolorata*," *by error*). Plant tall, base and leaves not seen. Raceme 6 in. long, somewhat lax. Bracts ovate-lanceolate, acuminate, 8–11 lin. long, somewhat pubescent. Pedicels 8–10 lin. long. Flowers green. Dorsal sepal oblong-lanceolate, acute, 3 lin. long; lateral oblique, obovate-oblong, apiculate in the upper angle, $4\frac{1}{2}$ lin. long. Petals bipartite, muriculate; posterior lobe falcate-linear, acute, as long as the dorsal sepal; anterior lobe lanceolate, acute, 4–5 lin. long. Lip tripartite; lobes linear, acute, somewhat broader below, longer than the anterior lobe of the petals; spur 8–9 lin. long, cylindrical, subclavate near the apex. Stigmatic processes 3 lin. long, stout, truncately subcapitate. Anther channels slender, longer than the stigmas. Rostellum triangular-subulate, somewhat recurved, $1\frac{1}{2}$ lin. long.

Mozamb. Dist. German East Africa: Kilimanjaro, 7000 ft., *Johnston*, 159!

The specimen is imperfect and the flowers in poor condition.

94. **H. nyikana,** *Reichb. f. in Otia Bot. Hamb.* ii. 100. Plant $1\frac{1}{2}$–$2\frac{1}{4}$ ft. high. Leaves cauline, oblong-linear, subattenuate, subobtuse, 3–6 in. long, 3–9 lin. broad, the upper becoming less in size. Racemes many-flowered, 7–10 in. long. Bracts lanceolate, acuminate, 10–12 lin. long. Pedicels 10–12 lin. long. Flowers green. Dorsal sepal oblong, subobtuse, 3 lin. long; lateral obliquely cuneate-obcordate, apiculate on the side, 4 lin. long, $2\frac{1}{2}$ lin. broad. Petals bipartite; posterior lobe

linear, curved, $2\frac{1}{2}$ lin. long; anterior lobe broader than and about twice as long as the posterior. Lip tripartite; lobes linear, about 6 lin. long; spur 1 lin. long, filiform, with a broadly clavate apex. Stigmatic processes 3 lin. long, with a clavate-capitate apex. Anther channels slightly curved, as long as the stigmas. Rostellum subulate, 1 lin. long. Capsules narrowly oblong, $\frac{3}{4}$ in. long, pedicelled.—Kränzl. in Engl. Jahrb. xvi. 72.

Mozamb. Dist. Portuguese East Africa: mouth of the Zambesi River, *Kirk!* Nyika Island, *Kirk*, drawing, 43!

95. **H. altior,** *Rendle in Journ. Linn. Soc.* xxx. 394. Plant 15 in. high, stem leafy below the middle. Leaves linear-lanceolate, acute, amplexicaul, $2\frac{1}{2}$–3 in. long, 2–3 lin. broad, the upper decreasing to the bracts. Spikes somewhat ovate, rather densely flowered, 3 in. long. Bracts oval, acuminate, sparsely ciliolate, the lower 10–11 lin. long. Pedicels 1 in. long, slightly verrucose. Flowers medium-sized. Dorsal sepal oval, with a narrow base, and thickened, spathulate apex, 3 lin. long; lateral very obliquely obovate, 4 lin. long; apex a little thickened. Petals bipartite, margin and upper face hispidulous; posterior lobe filiform, $3\frac{1}{2}$ lin. long; anterior lobe lanceolate-subulate, 6 lin. long. Lip tripartite, linear; side lobes subacute, 6 lin. long; front lobe obtuse, 7 lin. long; spur $\frac{3}{4}$ in. long, slightly dilated above the middle, where it is somewhat twisted. Stigmatic processes long, straight, thickened, capitate, $2\frac{1}{2}$ lin. long. Anther channels slender, curved above, nearly as long as the stigmas. Rostellum narrowly triangular, obtuse, as long as the anther cells. Staminodes bilobed.

Mozamb. Dist. German East Africa: higher slopes of Mount Kilimanjaro, above Morang, 10,000 ft., *Taylor!*

Near *H. schimperiana*. Hochst., but the flower-spike is short and dense, and the bracts larger, broader, and ciliolate.

96. **H. plectromaniaca,** *Reichb. f. & S. Moore in Journ. Bot.* 1878, 136 (*plectomaniaca, by error*). Plant 2–3 ft. high. Leaves cauline, linear or oblong-linear, acute, 5–9 in. long. Racemes 6–12 in. long, lax, many-flowered. Bracts lanceolate or ovate-lanceolate, acuminate, 8–12 lin. long. Pedicels $1\frac{1}{4}$–$1\frac{1}{2}$ lin. long. Dorsal sepal elliptic-lanceolate, subobtuse, 4 lin. long; lateral obliquely cuneate-oblong, apiculate slightly above the middle, 6 lin. long. Petals bipartite; posterior lobe linear-filiform, $3\frac{1}{2}$ lin. long; anterior lobe lanceolate, subobtuse, $4\frac{1}{2}$ lin. long. Lip tripartite; lobes linear; side lobes about 6 lin. long; front lobe $8\frac{1}{2}$–9 lin. long; spur $1\frac{3}{4}$ in. long, slender below, subclavate near the apex. Stigmatic processes 4 lin. long, slender, with a clavate-capitate apex. Anther channels slender, as long as the stigmas. Rostellum narrowly subulate, $1\frac{1}{2}$ lin. long.—Kränzl. in Engl. Jahrb. xvi. 87.

Nile Land. British East Africa: Nyika Country, near Mombasa, *Wakefield!*

Mozamb. Dist. German East Africa: Usambara; Amboni, on the Sigi River, *Holst*, 2818A!

97. **H. decaptera,** *Reichb. f. in Flora*, 1882, 531. Plant stout. Stem 20–24 in. high. Leaves appressed to the scape, long sheathing, firm, pilose, linear-lanceolate, acuminate, $3\frac{1}{4}$–6 in. long, the upper decreasing to the bracts. Racemes dense, many-flowered. Bracts long, lanceolate, acuminate or aristate, pellucid, scarious, $\frac{2}{3}$ as long as the pedicels. Pedicels as long as or shorter than the spur. Flowers white, 8 lin. diam. Dorsal sepal oblong, cuneate, concave, acute; lateral cuneate, rounded in front, apiculate on the posterior margin. Petals bipartite; lobes obtuse; anterior lobe a little larger than the posterior. Lip trilobed; lobes oblong-lanceolate; side lobes acute, otherwise like the petal lobes, a little smaller than the front lobe; spur filiform, straight, $1\frac{1}{2}$–$1\frac{3}{4}$ in. long; apex thickened. Stigmatic processes cochleate, truncate in front. Anther channels $\frac{1}{3}$ longer than the stigmas. Rostellum linear, small, concealed under the anther.—Kränzl. in Engl. Jahrb. xvi. 90.

Lower Guinea. Angola: Malange, *Mechow, Rausch,* 438.

Only known to me from the published descriptions.

98. **H. occultans,** *Welw. ex Reichb. f. in Flora*, 1865, 178. Plant $1\frac{1}{2}$–2 ft. high. Leaves cauline, oblong-lanceolate, acuminate, 2–4 in. long, decreasing upwards. Racemes 4–5 in. long, with five to eight large flowers. Bracts leaf-like, oblong-lanceolate, acuminate, $1\frac{3}{4}$–2 in. long. Pedicels $2\frac{1}{2}$–3 in. long. Dorsal sepal broadly ovate, cucullate, subacute, 7–8 lin. long; lateral deflexed, oblong-lanceolate, acuminate, 7–8 lin. long. Petals bipartite; posterior lobe falcate-oblong, subacute, $5\frac{1}{2}$–6 lin. long, erect, partly hidden within the dorsal sepal; anterior lobe obliquely triangular, acuminate, 2 lin. long. Lip tripartite; side lobes cuneate-linear, 9–10 lin. long, apical half broken up into 8–9, unequal filaments; front lobe linear-lanceolate, entire, 10 lin. long; spur 5–$5\frac{1}{2}$ lin. long, slender, slightly thickened above the middle, often descending into the bracts. Stigmatic processes stout, obliquely capitate, 2 lin. long. Anther channels free from the side lobes of the rostellum, linear, $2\frac{1}{2}$ lin. long. Rostellum with subulate, incurved side lobes, which are hooked near the apex and $3\frac{1}{2}$ lin. long; front lobe linear, obtuse, $1\frac{1}{2}$ lin. long.—Kränzl. in Engl. Jahrb. xvi. 93.

Lower Guinea. Angola: Huilla; swamps near the river Humpata, and near Lopolla, *Welwitsch,* 737! and without precise locality, *Antunes,* 15!

A remarkable species. Neither Reichenbach nor Kränzlin correctly describe the petals, and the latter makes no mention of the remarkable side lobes of the rostellum.

99. **H. Soyauxii,** *Kränzl. in Engl. Jahrb.* xvi. 93. Tuber ovoid. Plant strong, 20–28 in. high. Leaves bract-like, sheathing, many-nerved, oblong, subacute, 2–4 in. long, 7–12 lin. broad, decreasing upwards into the bracts. Racemes lax, remotely few-flowered. Pedicels 3 in. long. Flowers among the largest of the genus, $1\frac{1}{2}$ in. long, $\frac{3}{4}$ in. broad, sepals green, petals and lip white. Dorsal sepal ovate, acute, cucullate; lateral deflexed, oval, suboblique, acute, pilose. Petals bipartite; posterior lobe linear-lanceolate, acute, nearly as long as the dorsal sepal and hidden within it; anterior lobe petaloid, lanceolate,

deflexed, 1 in. long, $2\frac{1}{2}$ lin. broad. Lip tripartite; side lobes as long as the anterior lobe of the petals; front lobe slightly smaller than the side lobes; spur $6–6\frac{1}{4}$ in. long, filiform, descending not into its own bract but into the third or fourth below. Stigmatic processes fleshy, clavate near the apex, cochleate, excavate. Anther channels uncinate. Staminodes conspicuous, bi-tripartite. Rostellum narrow, acute, cucullate.

Lower Guinea. Gaboon: Kitamba, on marshy lowlands, *Soyaux*.

Only known to me from the original description.

100. **H. zenkeriana,** *Kränzl. in Engl. Jahrb.* xix. 247. Plant very stout, 4 ft. or more long, $\frac{3}{4}$ in. thick at the base. Leaves broadly ovate-oblong, obtuse, $4–4\frac{1}{2}$ in. long, $2\frac{1}{4}$ in. broad, decreasing into the bracts. Racemes lax. Bracts large. Pedicels $2\frac{1}{4}–3$ in. long. Flowers yellow-green, with a white lip. Dorsal sepal ovate, acute; lateral deflexed, obovate-cuneate, acute, revolute after flowering. Petals bipartite; posterior lobe triangular, acuminate, hidden in the dorsal sepal; anterior lobe $\frac{1}{3}$ larger than the posterior, linear, very acuminate, 2 in. long. Lip trilobed or tripartite; lobes very narrowly linear, subequal, 14 lin. long; spur filiform, $6–6\frac{1}{4}$ in. long; apex scarcely inflated. Stigmatic processes very strict. Anther channels a little shorter than the stigmas; gland very large; all a little shorter than the lip.

Upper Guinea. Cameroons: Yaunde, in marshy places on the plains, *Zenker*, 492.

Only known to me from the original description, which was prepared from a drawing.

101. **H. Walleri,** *Reichb. f. Otia Bot. Hamb.* ii. 98. Plant tall. Lower leaves not seen; upper reduced, oblong-linear. Racemes with about four large flowers. Bracts ovate or elliptic-ovate, shortly acuminate, $1\frac{1}{4}–1\frac{3}{4}$ in. long. Pedicels 3–4 in. long. Flowers white. Dorsal sepal ovate, cucullate, obtuse, 6 lin. long; lateral subobliquely elliptic-oblong, subobtuse or apiculate, 8 lin. long. Petals bipartite; posterior lobe linear-lanceolate, subobtuse, appressed to the margin of the dorsal sepal, 6 lin. long; anterior lobe oblong-lanceolate, subobtuse, 6–7 lin. long. Lip trilobed; lobes linear-oblong, subobtuse; side lobes 1 in. long; front lobe a little shorter than the side lobes; spur 3–4 in. long, slender, thickened near the apex, which is generally concealed within the bract. Stigmatic processes $4\frac{1}{2}–5$ lin. long, dilated and slightly recurved at the apex. Anther channels very stout, shorter by 1 lin. than the stigmas. Rostellum triangular, acute, 2 lin. long.—Kränzl. in Engl. Jahrb. xvi. 92.

Mozamb. Dist. British Central Africa: Nyasaland; at the foot of Mt. Mlanje, *Kirk!* Shire Highlands, near Blantyre, *Last!*

102. **H. perbella,** *Reichb. f. Otia Bot. Hamb.* ii. 98. Tuber ovate. Stem 20 in. high, leafy below, sheathed above. Leaves oblong, acute, $4–4\frac{3}{4}$ in. long, 1 in. broad, reduced to ovate, acute, ample sheaths above. Bracts large, foliaceous, not half as long as the pedicels. Pedicels $2\frac{1}{4}$ lin. long. Flowers 12–13 lin. diam. Dorsal sepal cucul-

late, ovate, acute, 5 lin. long; lateral deflexed, falcate, oblong, acute, 7 lin. long. Petals bipartite; lobes erect; posterior lobe ovate-triangular, acuminate; anterior lobe lanceolate, falcate, acute. Lip deeply trilobed; lobes linear-lanceolate, acute, 8 lin. long; front lobe slightly longer than the side lobes; spur filiform, very long, twice as long as the pedicel. Stigmatic processes straight, cochleate, excavate in front. Anther channels a little shorter than the stigmas. Staminodes large, bilobed; posterior lobe rounded; front lobe acute.—Kränzl. in Engl. Jahrb. xvi. 92. *H. oligantha*, Hochst. ex Kränzl. l.c. 92.

Nile Land. Abyssinia: *Schimper*, 592.

Only known to me from the published descriptions.

103. **H. cirrhata,** *Reichb. f. in Flora*, 1865, 180. Tuber oblong, 2 in. long, rather more than 1 in. broad. Stem about 2–3¼ in. high. Leaves 4–5, rounded or nearly orbicular, obtuse, 2–3¼ in. long, 2¼ in. broad. Racemes few-flowered. Bracts oblong, acute, convolute, 1½–2 in. long. Flowers large, white, scented like vanilla. Dorsal sepal oblong, acute or subobtuse, about 7 lin. long; lateral deflexed, oblong, obtuse, convolute, 9 lin. long. Petals bipartite; posterior lobe linear, 1 in. long; anterior lobe broader than the posterior, filiform, arcuate, 3¼–4 in. long. Lip tripartite; lobes filiform; side lobes 1 in. long; front lobe 14 lin. long; spur 5–8 in. long, filiform. Stigmatic processes very broadly capitate, upright, 7 lin. long. Anthers straight, thick, scarcely half as long as the dorsal sepal; channels 7 lin. long.—Kränzl. in Engl. Jahrb. xvi. 69; Reichb. f. Otia Bot. Hamb. i. 58. *Bonatea cirrhata*, Lindl. Gen. & Sp. Orch. 327. *Habenaria Schweinfurthii*, Reichb. f. Otia Bot. Hamb. i. 58.

Nile Land. Galabat; Matamma, among bushes, *Schweinfurth*, 2458. British East Africa: Jur; Jur Ghattas, among dense shrubs, *Schweinfurth*, 2023. Nyika Country near Mombasa, *Wakefield* (ex *Reichenbach*).

Also found in Madagascar. I have not seen Tropical African specimens.

104. **H. longistigma,** *Rolfe*. Plant tall, base and leaves not seen. Raceme lax, about 6-flowered. Bracts narrowly lanceolate, acuminate, 1½–1¾ in. long. Pedicels slender, 2¼–2½ in. long. Dorsal sepal lanceolate, acute, cucullate, 10 lin. long; lateral oblique, narrowly cuneate-obovate, falcately apiculate near the apex, 11 lin. long, margins strongly revolute. Petals bipartite; lobes filiform, recurved at the apex, anterior 10–11 lin. long, posterior 2 in. long. Lip tripartite, lobes filiform, somewhat curved, side lobes 1¼ in. long, front lobe stouter and rather longer; spur 3½ in. long, filiform below, subclavately inflated above. Stigmatic processes 9 lin. long, filiform, capitate. Anther channels slender, as long as the stigmas. Rostellum subulate, 3 lin. long.

Mozamb. Dist. German East Africa: without precise locality, *Hannington!*

105. **H. rhopalostigma,** *Rolfe*. Plant tall; upper part of stem 1 ft. long, with 2–3 bract-like sheaths, base not seen. Racemes subcorymbose, 2–4-flowered. Bracts ovate, shortly acuminate, 10–14 lin.

long. Pedicels $1\frac{3}{4}$–$2\frac{1}{4}$ in. long. Flowers large. Dorsal sepal ovate, acute, 8 lin. long; lateral oblong, cuneate-obovate, laterally apiculate, 9–10 lin. long. Petals bipartite, posterior lobe narrowly falcate-linear, as long as the dorsal sepal, appressed to its margin forming a galea; anterior lobe filiform, similar to the side lobes of the lip, $2\frac{1}{2}$ in. long. Lip tripartite; side lobes filiform, $2\frac{1}{4}$–$2\frac{1}{2}$ in. long; front lobe a little stouter above, $1\frac{1}{4}$ in. long; spur cylindrical, 5 in. long. Stigmatic processes clavate, 8 lin. long. Anther channels slender, 8 lin. long. Rostellum subulate, $3\frac{1}{2}$ lin. long. Staminodes triangular, acute, 1 lin. long.

Mozamb. Dist. British Central Africa: Fwambo, South of Lake Tanganyika, *Carson*, 31!

106. **H. Holubii,** *Rolfe.* Plant tall, base not seen. Upper leaves ovate-oblong, subacute, somewhat sheathing below, 2–3 in. long. Racemes lax, 3–8-flowered. Bracts ovate-oblong, acute, $\frac{3}{4}$–$1\frac{1}{2}$ in. long. Pedicels 2–$2\frac{1}{2}$ in. long. Dorsal sepal elliptic-oblong, acute, 8 lin. long; lateral oblique, falcate-obovate from a cuneate base, apiculate, 10–11 lin. long. Petals bipartite; posterior lobe filiform, as long as the dorsal sepal and adhering to its margin; anterior lobe falcate-linear, regularly attenuate upwards and acuminate, $1\frac{1}{4}$ in. long. Lip tripartite; side lobes ovate-lanceolate, acute, 4 lin. long; front lobe linear-filiform, acute, 1–$1\frac{1}{4}$ in. long; spur 3 in. long, slender below, clavate at the apex. Stigmatic processes 6–7 lin. long, slender, capitate. Anther channels slender, nearly as long as the stigmas. Rostellum triangular-subulate, acute, $2\frac{1}{4}$ lin. long.

Mozamb. Dist. Rhodesia: Leshumo Valley, near the Zambesi, *Holub*, 446! 447! 599!

107. **H. ecaudata,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 152. Plant very large and tall, the part seen over 2 ft. high. Leaves ovate-oblong, obtuse, 5 in. long, 2 in. broad, decreasing upwards into the bracts. Racemes about 7-flowered. Bracts oblong, acuminate, $\frac{1}{2}$–$\frac{2}{3}$ as long as the ovary. Flowers among the largest of the genus. Dorsal sepal cucullate, acute; lateral oblique, longer than the dorsal, cuneate, laterally apiculate; base united with the base of the lip and the stigmatic processes. Petals bipartite; posterior lobe linear, as long as the dorsal sepal and strongly agglutinated with it; anterior lobe very narrowly linear, more than twice as long as the posterior, recurved like a horn. Lip tripartite from an entire, linear base; lobes linear; side lobes very long, as long as the anterior lobe of the petals; front lobe one-third shorter than and twice as broad as the side lobes; spur entirely absent. Stigmatic processes cochleate at the apex. Anthers very tall, acute; channels very long, straight, as long as the stigmas. Rostellum serrulate in front; apex produced into a flattened minutely tuberculate limb.—Kränzl. in Engl. Jahrb. xxii. 19.

Mozamb. Dist. German East Africa: Usagara; hilly country, near Mtondwe, in a damp valley, *Stuhlmann*, 8282.

Remarkable for the absence of a spur, also in the shape of the rostellum, but said to be allied to *H. cirrhata*, Reichb. f. I have not seen it.

38. **RŒPEROCHARIS,** Reichb. f. Otia Bot. Hamb. ii. 104.

Sepals unequal, free, lateral somewhat spreading. Petals simple, free, much like the dorsal sepal. Lip continuous with the column, produced at the base into a spur; limb spreading or pendulous, simple or trilobed. Column very broad, footless; clinandrium divergently bilobed. Anther cells distant, terminating abruptly in front, without channels; pollinia granular, with short caudicles and exserted naked glands; staminodes lateral, transversely oblong. Stigmas descending in a pair of clavate-oblong processes, produced behind into a pair of tooth-like lobes; rostellum with the middle lobe obsolete; side lobes descending in triangular lobes, confluent with the arms of the column above.—Kränzl. in Reichb. f. Xen. Orch. iii. 102, t. 258.

An exclusively Tropical African genus of five species, differing from *Habenaria* in the remarkable structure of the column.

Lip trilobed.
- Front lobe of lip obtuse.
  - Spur clavate, $3\frac{1}{2}$ lin. long; apex obtuse . . 1. *R. bennettiana.*
  - Spur cylindrical, 6 lin. long; apex shortly bilobed . 2. *R. urbaniana.*
- Front lobe of lip shortly bilobed.
  - Lobes of lip subequal . . . . . 3. *R. platyanthera.*
  - Side lobes of lip longer and rather narrower than the front lobe . . . . . 4. *R. occidentalis.*

Lip simple . . . . . 5. *R. alcicornis.*

1. **R. bennettiana,** *Reichb. f. Otia Bot. Hamb.* ii. 104. Plant $1\frac{1}{4}$–$1\frac{1}{2}$ ft. high, leafy. Tuber globose or ovoid-oblong, $\frac{3}{4}$–1 in. long. Leaves suberect, lanceolate-oblong, acute, sheathing below, 3–4 in. long, decreasing upwards and with a few sheaths at the base. Racemes 5 in. long, dense-flowered. Bracts lanceolate, acuminate, 4–8 lin. long. Pedicels 4–5 lin. long. Dorsal sepal ovate, acute, $2\frac{1}{2}$ lin. long; lateral suberect, oblique, semiovate, acute, $2\frac{1}{2}$ lin. long. Petals broadly ovate, suddenly narrowed near the apex into a falcate-linear, subobtuse appendage. Lip 5 lin. long, shortly clawed below, trilobed above, side lobes narrowly falcate-linear, diverging; front lobe narrowly elongate-linear, longer than the side lobes; spur subclavate, $3\frac{1}{2}$ lin. long; apex bidentate. Arms of the column broad, diverging laterally, 2 lin. long; attachment of anther 1–$1\frac{1}{4}$ lin. from the base; caudicles short. Stigmatic processes subclavate, slightly curved, subparallel, $2\frac{1}{2}$ lin. long, prolonged behind into a linear-oblong appendage.—Oliv. in Hook. Ic. Pl. t. 1500; Kränzl. in Reichb. f. Xen. Orch. iii. 104, t. 258, fig. 2.

Nile Land. Abyssinia: Begemeder; Jan Meda, 8500 ft., *Schimper,* 1327!

2. **R. urbaniana,** *Kränzl. in Reichb. f. Xen. Orch.* iii. 104, *t.* 258, *fig.* 3. Plant slender, 6–12 in. high, 2–4-leaved in the middle. Tuber broadly ovate or subglobose. Leaves oblong or oblong-lanceolate, subacute, upper acuminate, $1\frac{1}{4}$–3 in. long, 4–7 lin. broad. Racemes $1\frac{1}{2}$–3 in. long, rather lax, 8–15-flowered. Bracts oblong-lanceolate, acuminate, 5–7 lin. long. Pedicels 4–5 lin. long. Dorsal sepal ovate

or ovate-lanceolate, acute, $2\frac{1}{2}$ lin. long; lateral obliquely ovate, acute, 3 lin. long. Petals obliquely ovate, subobtuse, $2\frac{1}{2}$ lin. long. Lip 5 lin. long, with a short broad claw, trilobed; lobes linear; side lobes diverging, shorter than the front lobe; spur cylindrical, slightly dilated above, 6 lin. long. Stigmatic processes oblong, descending, thick, 2 lin. long, each extending upwards in 2, free, oblong lobes. Column divided into two short, broad, diverging arms. Staminodes rounded. Arms of the rostellum nearly quadrate, $1\frac{1}{2}$ lin. long.

Nile Land. Abyssinia: Begemeder; Mount Guna, 10,000 ft., *Schimper*, 1333!

3. **R. platyanthera,** *Reichb. f. Otia Bot. Hamb.* ii. 104. Plant slender, 16 in. high. Tuber globose, 5 lin. long. Leaves squamiform at the base, black-spotted or wholly black towards the apex, upper ones linear-lanceolate, acuminate, appressed to the stem, $4\frac{3}{4}$ in. long, 5–7 lin. broad, decreasing upwards. Spikes congested, many-flowered. Bracts ovate, very acuminate, the lower as long as the flowers. Dorsal sepal broadly ovate, subacute; lateral $2\frac{1}{2}$ lin. long, larger than the dorsal, obliquely ovate, with a contracted apex; posterior side rounded. Petals ovate, very obtuse, as long as but narrower than the dorsal sepal. Lip scarcely 3 lin. long, trilobed, with a linear base; lobes narrowly linear; side lobes diverging; front lobe a little curved and slightly bidentate; spur nearly twice as long as the lip, slender at the base, clavate and bidentate at the apex. Column large; anther channels slightly produced, uncinate, closed at the apex. Stigmatic processes deflexed, ligulate, obtuse, parallel in front, a little diverging behind. Staminodes capitate, shining.—Kränzl. in Reichb. f. Xen. Orch. iii. 103, t. 258, fig. 1. *Habenaria platyanthera*, Reichb. f. in Linnæa, xxii. 860; Reichb. f. in Walp. Ann. iii. 587.

Nile Land. Abyssinia: Simen, *Rüppel* (ex *Reichenbach*). Begemeder; Gafat, 8100 ft., on the banks of brooks, *Schimper*, 1334! Gerra, 8000 ft., *Schimper*, 1273!

4. **R. occidentalis,** *Kränzl. in Engl. Jahrb.* xvii. 67. Stem 20 in. high. Leaves 3–4, linear-lanceolate, replaced by bracts both towards the roots and apex. Racemes many-flowered. Flowers yellow-green. Dorsal sepal broadly oblong, nearly orbicular, very obtuse; lateral oblong, obtuse, longer than the dorsal; all cucullate. Petals broader, oblique, rhomboid, retuse in front, subrepand. Lip tripartite; lobes linear; side lobes longer than the front lobe, somewhat bilobed at the apex; front lobe a little broader than the side lobes, narrowly ligulate, obtuse; spur pendulous, apex subclavate, obtuse, nearly as long as the pedicels, nearly twice as long as the lip. Stigmatic processes with very broad diverging arms, clavate, scarcely bipartite in front; posterior lobe reduced to a linear appendage; anterior lobe elongate. Anther cells small, obliquely superposed to the stigmas. Rostellum obtuse-angled.

Upper Guinea. Cameroons: in the grass region west of Buea, 7800–8200 ft., *Preuss*, 980.

This is the first West African species; and is said to be most allied to *R. alcicornis*, Kränzl. I have not seen it.

5. **R. alcicornis,** *Kränzl. in Reichb. f. Xen. Orch.* iii. 105, *t.* 258, *fig.* 4. Plant slender, 1 ft. high. Tuber globose, 7 lin. long. Leaves linear-lanceolate, acuminate, with about three obtuse sheaths below. Spikes $3\frac{1}{2}$ in. long, lax, many-flowered. Bracts ovate, acuminate, a little longer than the ovary. Pedicels 6 lin. long. Flowers yellow marked with brown. Dorsal sepal very broadly ovate, nearly orbicular, suddenly acute; lateral larger than the dorsal, semiovate, suboblique, acute, reflexed. Petals broader than long, very oblique, cuneate-obovate, apiculate, with the upper margin irregularly dentate and undulate. Lip simple, from a dilated base, narrowly linear, $3\frac{1}{2}$ lin. long, shorter than the pedicels; spur slender, recurved at the apex, inflated, obtuse, curved. Column very broad; anther arms very large, produced in front into acuminate, foliaceous appendages. Stigmatic processes similar, diverging, subclavate, subfalcate, with narrow stigmatic margins.

Nile Land. Abyssinia: Begemeder; Mount Guna, *Schimper,* 1364.

Only known to me by the original description and figure.

39. **BONATEA,** Willd.: Benth. et Hook. f. Gen. Pl. iii. 628.

Sepals unequal, free; dorsal erect, lateral oblique, reflexed. Petals deeply bipartite; posterior lobe erect, appressed to the margin of the dorsal sepal; anterior lobe descending, and simulating a lobe of the lip. Lip continuous with the column, produced at the base into a more or less elongated spur; limb spreading, base produced into a narrow claw, adnate to the base of the lateral sepals, the anterior lobe of the petals, and the stigmatic processes, tripartite above with narrow lobes. Column short, footless; clinandrium erect, as long as the anther. Anther cells somewhat diverging; apex inferior, prolonged in front into channels, confluent with the side lobes of the rostellum; pollinia granular, with elongate, curved caudicles, and exserted, naked glands; staminodes lateral, small, auriculate. Stigma bipartite, extended in front into a pair of elongate, subclavate processes; rostellum trilobed; middle lobe cucullate, apiculate; side lobes linear, elongate. Capsule oblong.—Terrestrial herbs, with the habit of a large *Habenaria.* Flowers rather large, racemose. Bracts ovate.

An exclusively Continental African genus of eight species, distinguished from *Habenaria* by the cucullate middle lobe of the rostellum, and by the union of the base of the lateral sepals, the anterior lobe of the petals, and the stigmatic processes with the claw of the lip.

Spur 1–2 in. long.
- Dorsal sepal 10 lin. long . . . . . 1. *B. Steudneri.*
- Dorsal sepal 7–8 lin. long.
  - Raceme short and few-flowered . . . . 2. *B. rabaiensis.*
  - Raceme long and many-flowered . . . . 3. *B. volkensiana.*

Spur $3\frac{1}{2}$–6 in. long.
- Lip $1\frac{1}{2}$ in. long . . . . . 4. *B. Emini.*
- Lip $2\frac{1}{2}$ in. or more long.
  - Side lobes of lip $1\frac{1}{4}$–$1\frac{1}{2}$ in. long . . . . 5. *B. Phillipsii.*
  - Side lobes of lip $2\frac{1}{2}$ in. long . . . . 6. *B. Kayseri.*

1. **B. Steudneri,** *Durand & Schinz, Conspect. Fl. Afr.* v. 90. Stem strong, 3–5 ft. high. Leaves oblong, acute, with a cartilaginous margin, decreasing upwards into the bracts. Racemes lax, about 20-flowered. Bracts oblong, acuminate, cucullate, 1 in. long. Pedicels as long as the bracts. Dorsal sepal free, oblong, apiculate, arched, 10 lin. long; lateral oblong-triangular, adnate below to the base of the lip and stigmatic processes, obliquely triangular above, 14 lin. long, 5 lin. broad. Petals bipartite; posterior lobe linear, acute, with a very shortly ciliate margin, cohering with the dorsal sepal; anterior lobe linear, acuminate, much shorter than the posterior. Lip tripartite; lobes linear, acute; spur cylindrical, as long as the pedicels. Stigmatic processes terete; apex very broadly spathulate, porrect, Anther channels elongate, straight. Rostellum cucullate, fornicate, apiculate, limb very setulose.—*Habenaria Steudneri*, Reichb. f. Otia Bot. Hamb. ii. 101; Kränzl. in Engl. Jahrb. xvi. 57; Engl. Hochgeb. Fl. Trop. Afr. 179.

Nile Land. Eritrea: Bogos; Keren, *Steudner*, 700. British East Africa: Ukamba; Kitui, *Hildebrandt*, 2652.

Only known to me from the original description. Reichenbach says that the type is at Berlin, where, however, Kränzlin has been unable to find it.

2. **B. rabaiensis,** *Rolfe.* Plant 10 in. high. Stem very stout, leafy below the middle. Leaves about 3, oval or ovate, with a sheathing base, $1\frac{1}{4}$–4 in. long. Racemes lax, few-flowered. Bracts membranous, acuminate, nearly 1 in. long. Pedicels $1\frac{1}{4}$ in. long. Flowers among the largest of the genus. Dorsal sepal ovate, subacute, cucullate, 8 lin. long; lateral oblique, oblong, with a falcate-apiculate apex, 9 lin. long. Petals bipartite; posterior lobe linear, cohering to and about as long as the dorsal sepal; anterior lobe 14 lin. long, filiform below, falcate above, with recurved, almost aristate tip. Lip trilobed; lobes filiform, much like the anterior lobes of the petals; side lobes $1\frac{1}{2}$ in. long; front lobe 1 in. long; spur cylindrical, stout, $1\frac{3}{4}$ in. long, slightly narrower below. Stigmatic processes elongate, thickened above the middle and verrucose, slightly recurved near the apex, 8 lin. long. Anther apiculate, a little shorter than the rostellum; channels slender, suberect, 4 lin. long. Rostellum cucullate, with a strong projecting apiculus.—*Habenaria rabaiensis*, Rendle in Journ. Linn. Soc. xxx. 390.

Nile Land. British East Africa: Rabai Hills, near Mombasa, *Taylor!*

3. **B. volkensiana,** *Rolfe.* A stately plant, 2–$2\frac{1}{4}$ ft. high. Leaves $3\frac{1}{4}$ in. long, $1\frac{3}{4}$ in. broad, decreasing upwards into the bracts. Racemes long, many-flowered. Pedicels about $1\frac{1}{2}$ in. long. Flowers white. Dorsal sepal oval, acute, galeate, 7 lin. long; lateral deflexed, oblong, subacute, adnate below to the base of the lip and stigmatic processes. Petals bipartite; posterior lobe linear-lanceolate, acuminate, appressed to the dorsal sepal, pellucid; anterior lobe linear, very acuminate, 1 in. long. Lip tripartite; side lobes similar to the anterior lobe of the petals but a little longer; front lobe linear, acute, rather shorter than the side lobes; disc with a small, erect, acute tooth in

front of the spur; spur cylindrical, rather thick, obtuse, 1½ in. long. Stigmatic processes slightly thickened in front, longitudinally excavate, basal fifth adnate to the lip. Anther apiculate; channels very slender, ⅔ as long as the stigmas. Rostellum dwarf, globose-cucullate, margin fimbriate.—*Habenaria volkensiana*, Kränzl. in Engl. Jahrb. xix. 244.

Mozamb. Dist. German East Africa: Kilimanjaro, East of Marangu, near Kwa Ileto, 3200–4900 ft., on sandy grassy hillocks, *Volkens*, 342!

4. **B. Emini,** *Rolfe.* Stem tall. Leaves not known; sheaths very broadly ovate, acute or acuminate. Spikes lax-flowered. Bracts oblong-ovate, acute, as long as the pedicels. Dorsal sepal oblong, acute, cucullate, 9 lin. long; lateral triangular, more than twice as long as the dorsal, retuse, apiculate, united with the base of the lip, stigmatic processes, and anterior lobe of the petals. Petals bipartite; posterior lobe linear, acute, hidden under the dorsal sepal; anterior lobe 3–4 times as long as the posterior, 1½ in. long. Lip 1½ in. long, base elongate, filiform, the upper fifth tripartite; side lobes linear, acute, diverging; front lobe a little shorter than the side lobes; spur 5½ in. long, nearly twice as long as the pedicels, straight, ascending, a little broader above. Stigmatic processes linear, slightly excavate. Anther very long, acute, attenuate at the base; channels and caudicles very long, straight, shorter than the stigmas. Rostellum cucullate, apiculate, with toothed margins.—*Habenaria Emini*, Kränzl. in Engl. Jahrb. xix. 245.

Mozamb. Dist. German East Africa: Uyansi; Pungusi, in the Mgunda-Mkali, *Stuhlmann*, 420.

Only known to me from the original description.

5. **B. Phillipsii,** *Rolfe.* Plant about 2 ft. high. Leaves cauline, sessile, oblong or elliptic-oblong, acute, or abruptly and very shortly acuminate, 2–5 in. long, ¾–1½ in. broad, the upper decreasing to the bracts. Racemes about 7-flowered. Bracts ovate-lanceolate, acuminate, 1–1¼ in. long. Pedicels 2½ in. long. Flowers white and green. Dorsal sepal ovate-lanceolate, acute, 10 lin. long; lateral cuneate-oblong from a narrower base, oblique or subfalcate, apiculate or acuminate below the apex, 1 in. long, lower half or more adnate to the base of the lip, stigmatic processes, and the anterior lobe of the petals. Petals deeply bipartite; posterior lobe erect, narrowly linear, acute, as long as the dorsal sepal and appressed to it; anterior lobe elongate-linear, 1¾ lin. long. Lip deeply trilobed; claw 10–12 lin. long, free part 1 lin. long; lobes elongate-linear; side lobes 1¼–1½ lin. long; front lobe ¾–1 in. long; spur elongate, slightly dilated, 3½–4 in. long. Stigmatic processes 11 lin. long; apex short, free, subspathulate. Anther 4 lin. long; channels slender, 8 lin. long. Rostellum cucullate, apiculate, 8 lin. long.—*Habenaria Phillipsii*, Rolfe in Kew Bulletin, 1895, 227.

Nile Land. Somaliland: Golis Range at Darra-as, in a deep gorge near water, *Lort Phillips!*

6. **B. Kayseri,** *Rolfe.* Stem strong, leafy (base not seen). Leaves lanceolate-oblong, acute, amplexicaul, 3–5¼ in. long, 1–2¼ in. broad. Racemes about 7-flowered. Bracts lanceolate or oblong-lanceolate, acuminate, 1¼–2 in. long. Pedicels 2–3 in. long. Dorsal sepal ovate, shortly acuminate, 8–9 lin. long; lateral obliquely cuneate-obovate, apiculate below the apex, 14 lin. long, adnate ½ its length to the base of the lip, stigmatic processes, and the anterior lobe of the petals. Petals bipartite; posterior lobe narrowly linear, as long as the dorsal sepal and united to the edge of it; anterior lobe narrowly elongate-linear, 2¼ in. long. Lip deeply trilobed; claw 1 in. long, the upper third free; side lobes similar to the anterior lobe of the petals, 2½ in. long; front lobe 1½ in. long; spur slender, 6 in. long, slightly thickened near the apex. Stigmatic processes 1¼ in. long; apex subspathulate, recurved. Anther channels slender, ¾ lin. long. Rostellum cucullate, apiculate, 4 lin. long. Staminodes oblong, 1 lin. long.—*Habenaria Kayseri,* Kränzl. in. Engl. Jahrb. xix. 246; Engl. Pfl. Ost-Afr. C. 152, t. 7.

Mozamb. Dist. German East Africa: Usambara; Mlalo, *Holst,* 635, 2443! Kilimanjaro; Marangu, on hillocks, *Volkens,* 630.

40. **PLATYCORYNE**, Reichb. f.; Benth. et Hook. f. Gen. Pl. iii. 632.

Dorsal sepal erect, broad, cucullate; lateral free, reflexed, narrow. Petals free or slightly adnate to the base of the column, narrow, entire or rarely unequally bilobed. Lip continuous with the base of the column, produced at the base into a filiform or clavate spur; limb spreading, entire or unequally trilobed. Column short, footless; clinandrium erect, as long as the anther. Anther erect or suberect; cells parallel, apex inferior, produced into somewhat diverging channels, confluent with the side lobes of the rostellum; pollinia granular, with elongate caudicles and exserted naked glands; staminodes lateral, rounded or auriculate. Stigma bilobed, or extended into two short thick processes; rostellum trilobed; middle lobe narrow, more or less cucullate; side lobes broad and short. Capsule oblong.—Slender, terrestrial herbs. Leaves few, basal, small or narrow. Flowers rather small, in short or few-flowered racemes. Bracts broadly ovate, cucullate.

A genus of nine Tropical African species, with an outlying representative in Madagascar. Bentham refers it to the *Diseæ,* where it is clearly out of place, and Kränzlin unites it with *Habenaria,* though I think it can be maintained on account of the cucullate middle lobe of the rostellum, short thick stigmatic processes, and marked habit.

Petals simple.
- Spur 1–1½ lin. long . . . . . 1. *P. aurea.*
- Spur 4–7 lin. long.
  - Lip simple or obscurely toothed or auricled at the base.
    - Western species.
      - Spur not much longer than the sepals . . 2. *P. paludosa.*
      - Spur twice as long as the sepals . . . 3. *P. Wilfordii.*

Eastern species.
Spur clavate . . . . . 4. *P. buchananiana.*
Spur scarcely dilated at the apex . . . 5. *P. tenuicaulis.*
Lip distinctly trilobed . . . . . 6. *P. crocea.*
Spur 11–13 lin. long . . . . . 7. *P. Protearum.*
Petals bilobed.
Posticous petal lobe filiform . . . . . 8. *P. Guingangæ.*
Posticous petal lobe ovate-lanceolate . . . 9. *P. poggeana.*

1. **P. aurea,** *Rolfe.* Plant slender. Stem 12–13 in. long, sparsely leafy. Leaves oblong-lanceolate, acute or acuminate, 1¼–2 in. long, 4–5 lin. broad, passing into sheaths below and bracts above. Racemes congested, 3–5-flowered. Bracts nearly spathaceous, ovate, acute. Flowers 3–4 lin. long, golden yellow. Dorsal sepal ovate, acute, cucullate or galeate, recurved at the apex; laterals deflexed, subfalcate, oblong, acuminate. Petals simple, falcate, adherent to the dorsal sepal. Lip simple, narrowed from a triangular base, acuminate, as long as the lateral sepals; spur filiform, straight, 1–1½ lin. long. Stigmatic processes thick, fleshy. Anther channels straight, "a little shorter than their caudicles." Rostellum with a cucullate base, lanceolate above, nearly as long as the anther.—*Habenaria aurea,* Kränzl. in Engl. Jahrb. xvi. 209; Durand & Schinz, Conspect. Fl. Afr. v. 74.

Upper Guinea. Upper Senegal, in rice fields, *Lecard,* 204.
Only known to me from the original description.

2. **P. paludosa,** *Rolfe.* Plant slender, 1–1½ ft. high. Leaves few, cauline, rather distant, oblong-lanceolate, acute, ½–1¼ in. long. Racemes 2–4- (sometimes 1-) flowered. Bracts ovate-lanceolate, shortly acuminate, 4–5 lin. long. Pedicels 6–9 lin. long. Flowers deep orange. Sepals 4 lin. long; dorsal ovate-oblong, apiculate; lateral lanceolate-oblong, subacute. Petals simple, lanceolate, subacute, 4 lin. long, appressed to the dorsal sepal. Lip subspathulate-linear, obtuse, 2½ lin. long, with a pair of minute, basal teeth; spur subclavate, subacute, 4 lin. long. Stigmatic processes oblong, obtuse, connate, 1 lin. long. Anther channels linear-oblong, 1½ lin. long. Rostellum triangular, subobtuse, 1 lin. long.—*Habenaria paludosa,* Lindl. in Journ. Linn. Soc. vi. 139; Kränzl. in Engl. Jahrb. xvi. 208.

Upper Guinea. Niger Territory: Nupe; in swamps, *Barter,* 1479!

3. **P. Wilfordii,** *Rolfe.* Tuber oblong, ¾ in. long, 5 lin. broad. Stem slender, 8–11 in. long, 4–5-leaved. Leaves oblong-lanceolate, acute or apiculate, sheathing, 1 in. long, 2½ lin. broad. Racemes 1–3- (usually 2-) flowered. Bracts broadly ovate, one-third as long as the ovary. Pedicels 14 lin. long. Flowers yellow. Dorsal sepal broadly oblong, acute, 3½ lin. long; laterals reflexed, half twisted, oblong-linear, acute, carinate behind. Petals lanceolate, falcate, acute, adherent to the margin of the dorsal sepal, free only at the apex. Lip simple, narrowly linear from a slightly smaller base, obtuse, as long as the sepals; spur cylindrical, obtuse, twice as long as the sepals. Stigmatic processes triangular, acute from a broad base, deeply excavate

below. Anther channels as long as the stigmas; caudicles very long. Rostellum small, linear, nearly as long as the anthers.—*Habenaria Wilfordii*, Ridl. in Journ. Bot. 1886, 295; Kränzl. in Engl. Jahrb. xvi. 210.

Upper Guinea. Sierra Leone: Freetowa, *Wilford!* in grassy places among bushes, *Preuss* (ex *Kränzlin*).

4. **P. buchananiana,** *Rolfe.* Plant 1–1¼ ft. high. Tuber oblong, 7–8 lin. long. Leaves 5–6, cauline, linear-lanceolate, acuminate, ¾–1½ in. long, decreasing upwards into the bracts. Racemes 1–2½ in. long, few- to many-flowered. Bracts ovate-lanceolate, acute or acuminate, 4–7 lin. long. Pedicels 6–9 lin. long. Flowers yellow. Dorsal sepal elliptic-ovate, acute, 3–4 lin. long; lateral lanceolate-oblong, acute, 3–4 lin. long. Petals oblong-lanceolate, acute, 2½–3 lin. long, forming a galea with the dorsal sepal. Lip entire, triangular-lanceolate, subobtuse, broader and obscurely angled at the base, 2½–3½ lin. long; spur 5½–6½ lin. long, slender below, subclavate above. Stigmatic processes oblong, stout, connate, ¾ lin. long. Anther channels erect, stout, nearly as long as the stigmas. Rostellum triangular, subulate, 1 lin. long.—*Habenaria buchananiana*, Kränzl. in Engl. Jahrb. xix. 247; Rendle in Journ. Bot. 1895, 295.

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan*, 739! 1155! Lake Nyasa, *Simons!* Shire Highlands, plentiful in marshy places, *Buchanan*, 318! Manganja Hills, *Waller!* Magomoro Mission Station, 3000 ft., *Waller!* Mt. Mlanje, *Scott-Elliot*, 8617! Urungu; Fwambo, South of Lake Tanganyika, 5250 ft., *Nutt!* German East Africa: Unyamwezi; Msalala, *Hannington!* Urambo, *Hannington!*

5. **P. tenuicaulis,** *Rolfe.* Plant very slender, 1 ft. high. Leaves about 5, linear, acute, distant, bract-like, 1–1½ in. long, with sheathing base (basal ones not seen). Racemes subcorymbose, 1½ in. long, few-flowered. Bracts ovate, acute, 4–5 lin. long. Pedicels 7 lin. long. Flowers small. Dorsal sepal broadly ovate, acute, cucullate, 4½ lin. long; lateral reflexed, narrowly linear-oblong from a short base, acute, unequally plicate, 5 lin. long. Petals entire, falcate-linear, acute, adnate to the sides of the dorsal sepal into a galea, 4 lin. long. Lip ligulate, obtuse, obtusely angled on both sides above the base, with much reflexed margin, 4½ lin. long; spur slender, 7 lin. long, scarcely dilated at the apex. Stigmatic processes ovate-subrhomboid, compressed, with a slender base, 1½ lin. long. Anther erect, strongly apiculate; channels truncate, slightly longer than the stigmas. Rostellum triangular, very apiculate, slightly longer than the anther, 2 lin. long.—*Habenaria tenuicaulis*, Rendle in Journ. Linn. Soc. xxx. 396.

Mozamb. Dist. German East Africa: between Unyamwezi and the coast, *Taylor!*

6. **P. crocea,** *Rolfe.* Plant slender, 1–1¼ ft. high. Leaves about 7, cauline, lanceolate, acute or acuminate, ¾–1¼ in. long, 1½–2 lin. broad, decreasing upwards. Racemes short or subcapitate, 3–4-flowered. Bracts ovate-oblong, acuminate, 3–6 lin. long. Pedicels 5–6 lin. long.

Flowers orange-buff. Dorsal sepal broadly ovate, obtuse, cucullate, $2\frac{3}{4}$ lin. long; lateral ovate-oblong, obtuse, as long as the dorsal sepal. Petals ovate-oblong, subobtuse, $2\frac{1}{2}$ lin. long. Lip trilobed; side lobes small, triangular, subobtuse, $\frac{1}{2}$ lin. long; front lobe ovate-lanceolate, subobtuse, $2\frac{1}{2}$ lin. long; spur $7\frac{1}{2}$ lin. long, slender below, slightly thickened above. Stigmatic processes short, subglobose, deflexed, approximate. Anther channels stout, $\frac{3}{4}$ lin. long. Rostellum triangular, obtuse, fleshy, $\frac{1}{2}$ lin. long.—*Habenaria crocea*, Schweinf. ex Reichb. f. Otia Bot. Hamb. i. 57; Kränzl. in Engl. Jahrb. xvi. 208.

Nile Land. British East Africa: Niam-niam, South of the Lehssy River, in wet grassy places, *Schweinfurth*, 3968!

7. **P. Protearum,** *Rolfe.* Plant slender, 8–10 in. high. Tuber oblong, 6–8 lin. long. Leaves 4–6, cauline, lanceolate or oblong-lanceolate, acute, $\frac{1}{2}$–1 in. long, decreasing a little upwards. Racemes short, 2–4-flowered. Bracts ovate-oblong, shortly acuminate, 4–6 lin. long. Pedicels slender, 12–14 lin. long. Flowers greenish-white with a yellow lip. Dorsal sepal ovate, obtuse, cucullate, $2\frac{1}{2}$ lin. long; lateral deflexed, ovate-oblong, apiculate. Petals semiovate-triangular, obtuse, tightly adherent to the dorsal sepal and a little shorter than it. Lip broadly ovate-oblong, obtuse, sides recurved, $2\frac{1}{2}$ lin. long; spur 11–13 lin. long, slender, a little stouter beyond the middle, hidden within the bract. Stigmas subglobose. Anther channels scarcely as long as the stigmas. Rostellum erect, $1\frac{1}{4}$ lin. long, slightly trilobed from a somewhat cucullate base; side lobes reduced to a small, rounded, marginal tooth; front lobe triangular, subobtuse, enclosed within the galea, much longer than the anther.—*Habenaria Protearum*, Reichb. f. Otia Bot. Hamb. i. 57; Kränzl. in Engl. Jahrb. xvi. 215. *H. paludosa*, Reichb. f. in Flora, 1865, 178 (not Lindl.).

Lower Guinea. Angola: Huilla; woods of Monino, in sandy, somewhat shady places among Proteaceæ, *Welwitsch*, 708! Huilla, *Antunes*, 18!

8. **P. Guingangæ,** *Rolfe.* Plant slender, $1\frac{1}{2}$ ft. high. Tuber oblong, $\frac{3}{4}$ in. long. Leaves 2–3, cauline, lanceolate-oblong, acute or subacute, about $1\frac{1}{4}$ in. long, 2–$2\frac{1}{2}$ lin. broad, decreasing upwards into very narrow, acuminate sheaths. Racemes subcapitate, about 8-flowered. Bracts ovate, acute, 3–5 lin. long. Pedicels 5–6 lin. long. Sepals carinate; dorsal broadly ovate, subacute, 3 lin. long; lateral ovate-oblong, acute, $3\frac{1}{4}$ lin. long. Petals bifid; posterior lobe filiform, small, $\frac{3}{4}$ lin. long; anterior lobe lanceolate-oblong, subacute, $2\frac{3}{4}$ lin. long. Lip tripartite; side lobes linear-filiform, obtuse, $1\frac{1}{4}$ lin. long; front lobe rather stouter than the side lobes, $2\frac{3}{4}$ lin. long; spur 5 lin. long, slender below, slightly thickened above. Stigmatic lobes short, dilated, suborbicular. Anther channels stout, $1\frac{1}{2}$ lin. long. Rostellum subulate, $1\frac{1}{2}$ lin. long.—*Habenaria Guingangæ*, Reichb. f. in Flora, 1865, 179; Kränzl. in Engl. Jahrb. xvi. 207.

Lower Guinea. Angola: Pungo Adongo; Barrancos de Catete, in rich bushy pastures, rare, *Welwitsch*, 692!

9. **P. poggeana,** *Rolfe.* Plant slender, 16 in. high. Leaves

cauline, 1 or 2, linear; sheaths 2–4, bract-like, acuminate. Spikes congested, 5–6-flowered. Bracts broadly ovate, acute, nearly half as long as the pedicels. Pedicels 7–8 lin. long. Flowers yellow or buff. Dorsal sepal cucullate, acute, 3 lin. long; lateral deflexed, linear, acute, subfalcate, $3\frac{1}{2}$–4 lin. long. Petals bipartite; posterior lobe ovate-lanceolate, adherent to the dorsal sepal, and nearly as long as it; anterior lobe linear, hooked. Lip tripartite; side lobes minute, as long as the anterior lobe of the petals; front lobe much larger than the side lobes, linear, obtuse, rugose above, appearing constricted in the middle on account of the revolute margin; spur filiform, inflated towards the apex, acute, straight, 6 lin. long. Anther very long, acute, nearly as long as the dorsal sepal; channels cylindrical, straight. Stigmatic processes very broad, connate in front, excavate below, appressed to the lip. Rostellum narrow, linear, acuminate.—*Habenaria poggeana*, Kränzl. in Engl. Jahrb. xvi. 207.

South Central. Congo Free State: open country near the River Lulua, *Pogge*, 1443 (ex *Kränzlin*).

41. **CYNORCHIS,** Thou.; Benth. et Hook. f. Gen. Pl. iii. 628.

Sepals subequal; dorsal erect, concave; lateral oblique and spreading. Petals entire, narrower than the dorsal sepal, and appressed to its margins, forming a hood. Lip inferior, continuous with the column, spreading, usually broad, 3–5-lobed, produced at the base into a short or elongated spur. Column very short and broad; clinandrium erect or somewhat reclinate. Anther cells diverging; apex inferior, more or less elongated and adnate to the side lobes of the rostellum, forming slender channels; pollinia granular, extended into slender caudicles, terminating in small, exserted, naked glands. Stigma bilobed, extended into a pair of oblong or clavate, papillose processes; rostellum trilobed; middle lobe concave or complicate, often large; side lobes elongated, forming channels for the caudicles of the pollinia. Capsules erect, oblong or fusiform, sometimes shortly beaked.—Terrestrial herbs, with fasciculate, fleshy roots, sometimes thickened into tubers. Leaves radical, few or solitary, oblong or elongated. Flowers small or medium-sized, pedicellate, arranged in lax, short or elongated racemes. Bracts small or narrow.

A genus of about 30 species, the majority natives of the Mascarene Islands, with the following Tropical African representatives:—

Lip entire.
- Spur 2–3 lin. long.
  - Plant 8–18 in. high.
    - Lip linear, subobtuse. . . . . 1. *C. anacamptoides.*
    - Lip cuneate-oblong, obscurely tridenticulate . 2. *C. Buchanani.*
  - Plant 5 in. high . . . . . 3. *C. Usambaræ.*
- Spur 8 lin. long . . . . . 4. *C. Volkensii.*

Lip 4-lobed . . . . . 5. *C. Kirkii.*

Lip 5-lobed.
- Stem nearly glabrous . . . . . 6. *C. Hanningtoni.*
- Stem glandular-pubescent . . . . . 7. *C. Johnsoni.*

1. **C. anacamptoides,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 151. Plant 8–18 in. high. Leaves 3–4, mostly near the base, linear-lanceolate, acute, attenuate below, rarely oblong, 2–4½ in. long, 3½–5 lin. broad. Racemes very short, dense, glandular-pubescent. Bracts lanceolate, acute or acuminate, 3–5 lin. long. Pedicels 2½–3½ lin. long. Flowers rose-coloured. Dorsal sepal broadly ovate, acute, 1¼ lin. long; lateral suboblique, ovate-oblong, subobtuse, slightly longer than the dorsal. Petals ovate-oblong, apiculate or subobtuse, 1¼ lin. long, forming a galea with the dorsal sepal. Lip simple, linear, subobtuse, 1¼ lin. long; spur subfusiform, 2 lin. long. Column very short, Anther channels very short. Stigmatic processes dilated, oblong. Rostellum shortly trilobed; front lobe triangular, subobtuse, ⅓ lin. long; side lobes minute, tooth-like.—Kränzl. in Engl. Jahrb. xxii. 18; Rendle in Journ. Bot. 1895, 295.

Nile Land. British East Africa: Ruwenzori, 8200 ft., *Stuhlmann*, 2346 (ex *Kränzlin*); Butagu, 9000–10,000 ft., among heather, *Scott-Elliot*, 8008 in part! Kivata, 9000–9600 ft., open places, *Scott-Elliot*, 7648! 7747!

2. **C. Buchanani,** *Rolfe.* Plant 1–1¼ ft. high, glandular-pubescent above. Leaves 2–3 near the base, lanceolate-oblong, subacute, narrowed below, 1½–3 in. long, with a few lanceolate, acuminate sheaths above. Racemes 1¼–2 in. long, dense. Bracts lanceolate, acuminate, 2–4 lin. long. Pedicels 2–3 lin. long. Dorsal sepal ovate, subobtuse, cucullate, 2 lin. long; lateral obliquely ovate-oblong, subobtuse, 2½ lin. long. Petals falcate-oblong, obtuse, 2 lin. long. Lip entire, narrowly cuneate-oblong, obtuse or obscurely tridenticulate at the apex, 3 lin. long; spur slender, cylindrical, a little curved, 2½ lin. long. Anther channels short. Stigmatic processes very short, ½ lin. long. Rostellum triangular-subulate, ½ lin. long; apex slightly incurved, and apiculate; face subconcave.

Mozamb. Dist. British Central Africa: Shire Highlands, top of Mt. Zomba, *Buchanan*, 308!

3. **C. Usambaræ,** *Rolfe.* Plant small, about 5 in. high, sparsely glandular-setulose above. Tuber oblong, 5–6 lin. long. Leaves 2, basal, ovate-oblong, acuminate, 10 lin. long. Racemes 2–2¼ in. long, about 14-flowered. Bracts ovate-lanceolate, acuminate, 1½–2½ lin. long. Pedicels 2½–3 lin. long. Dorsal sepal ovate, subacute, cucullate, 1 lin. long; lateral ovate-oblong, obtuse, 1¼ lin. long. Petals ovate, subobtuse, scarcely shorter than the dorsal sepal. Lip entire, oblong, obtuse, ¾ lin. long; spur 2¼ lin. long, cylindrical. Anther channels slender, ¼ lin. long. Stigmatic processes very short, sessile, oblong. Rostellum minute.

Mozamb. Dist. German East Africa: Usambara; Mtai, *Holst*, 2474!

4. **C. Volkensii,** *Kränzl. in Engl. Pfl. Ost-Afr. C.* 151. Plant 9–12 in. high; stem glandular-pubescent, with 2–3 acuminate sheaths. Leaves 1 or 2, basal, suberect, ovate-oblong or cuneate-oblong, acute or obtuse, 2–4¼ in. long, 9–11 lin. broad. Racemes 1–4 in. long, lax,

many-flowered. Bracts lanceolate, acuminate, 2–5 lin. long. Pedicels 4–6 lin. long. Flowers violet. Dorsal sepal ovate, subacuminate or apiculate, $2\frac{1}{2}$ lin. long; lateral deflexed, oblique, oblong-lanceolate, subfalcate, subobtuse, 3–$3\frac{1}{2}$ lin. long. Petals oblique, ovate-oblong, subobtuse, $2\frac{1}{2}$ lin. long, forming a galea with the dorsal sepal. Lip entire, linear-oblong, obtuse, 3 lin. long, somewhat reflexed at the sides; spur cylindrical, very slightly dilated above, curved, 8 lin. long. Anther channels scarcely as long as the stigmas. Stigmas deflexed, $\frac{3}{4}$ lin. long, dilated above, truncate. Rostellum triangular, obtuse, face concave, $\frac{1}{2}$ lin. long.—Kränzl. in Engl. Jahrb. xxii. 18. *Habenaria pleistadenia*, Reichb. f. ex Oliv. in Journ. Linn. Soc. xxi. 404; Trans. Linn. Soc. ser. 2, ii. 350.

Mozamb. Dist. German East Africa: Kilimanjaro; above Shira, 2800 ft., *Volkens*, 1944! 8000–10,000 ft., *Thomson! Johnston*, 29!

5. **C. Kirkii,** *Rolfe.* Plant 9–12 in. high. Tuber oblong, 1 in. long. Leaf solitary, basal, spathulate or spathulate-oblong, obtuse or apiculate, $3\frac{1}{2}$–$5\frac{1}{2}$ in. long, 1–$1\frac{1}{2}$ in. broad. Scapes slender, with one lanceolate, acuminate sheath below the middle, 2–3-flowered at the apex. Bracts lanceolate or oblong-lanceolate, acuminate, 3–6 lin. long. Pedicels 8–9 lin. long. Dorsal sepal broadly ovate, obtuse, 2 lin. long; lateral ovate-oblong, subobtuse or apiculate, $2\frac{1}{2}$ lin. long. Petals ovate-lanceolate, subobtuse, $2\frac{1}{2}$ lin. long. Lip 3–4 lin. long, 4-lobed; lobes obtuse or truncate, oblong, crenulate; spur cylindrical, slender, 10–11 lin. long. Anther channels slender. Stigmatic processes broadly clavate, $\frac{3}{4}$ lin. long. Rostellum cucullate, nearly as long as the anther.

Mozamb. Dist. Portuguese East Africa: Morambala Mountain, 1800 ft., *Kirk!* The flowers are not very well preserved.

6. **C. Hanningtoni,** *Rolfe.* Stem slender, over 6 in. high, glabrous; base not seen. Racemes 2 in. long, lax. Bracts lanceolate, acuminate, 2–$3\frac{1}{2}$ lin. long. Pedicels 3–4 lin. long. Dorsal sepal ovate, subacute, $1\frac{3}{4}$–2 lin. long; lateral obliquely falcate-oblong, subobtuse, $2\frac{1}{2}$ lin. long. Petals oblong, subfalcate, obtuse, $1\frac{3}{4}$–2 lin. long. Lip $2\frac{1}{2}$ lin. long, 5-lobed; basal pair of lobes linear, diverging; next pair rather broader; middle lobe oblong, obtuse; spur linear, cylindrical, 2 lin. long. Anther channels short. Stigmatic processes very short, oblong, deflexed. Rostellum minute; front lobe triangular, subacute.

Mozamb. Dist. German East Africa, without precise locality, *Hannington!*

7. **C. Johnsoni,** *Rolfe.* Plant slender, 9 in. high, glandular-pubescent above; base not seen. Leaves oblong-lanceolate, subacuminate, $1\frac{1}{4}$ in. long, $3\frac{1}{2}$ lin. broad. Racemes 3 in. long, lax, few-flowered. Bracts ovate-lanceolate, acuminate, $1\frac{1}{2}$–2 lin. long. Pedicels 3–$3\frac{1}{2}$ lin. long. Dorsal sepal ovate, subobtuse, $1\frac{1}{4}$ lin. long; lateral broadly falcate-oblong, subobtuse, 2 lin. long. Petals ovate-oblong, subobtuse, $1\frac{1}{4}$ lin. long. Lip 3 lin. long, 5-lobed; basal pair of lobes linear-triangular, acute, oblique, $\frac{1}{2}$ lin. long; next pair narrowly triangular,

acute, oblique, 1 lin. long; middle lobe obovate-oblong, obtuse, 1¼ lin. long; spur slender, 2½ lin. long. Column short, stout.

Mozamb. Dist. Portuguese East Africa: Mountains East of Lake Nyasa, *Johnson!*

42. **AMPHORCHIS,** Thou.; Blume in Mus. Lugd. Batav. ii. 190.

Flowers inverted. Dorsal sepal inferior, more or less concave; lateral oblique, broader and more spreading. Petals smaller than the lateral sepals, somewhat spreading. Lip superior, cuneate, broad and dilated above, entire or shortly trilobed at the apex; base produced into an elongated or slender spur. Column short and broad. Anther horizontal; cells nearly parallel; base somewhat produced, and more or less adnate to the side lobes of the rostellum; pollinia granular, extended into slender caudicles, terminating in small, exserted, naked glands. Stigma shortly bilobed, forming a pair of rounded processes; rostellum trilobed; front lobe triangular or oblong, more or less concave or cucullate; side lobes elongated, forming channels for the caudicles of the pollinia.—Terrestrial herbs, with fasciculate, fleshy roots, sometimes thickened into tubers. Leaves radical, few or solitary, oblong or elongated. Flowers small, pedicellate, arranged in lax, short or somewhat elongated racemes. Bracts small and narrow.—Ridl. in Journ. Linn. Soc. xxi. 517.

A genus of four species, confined to the Mascarene Islands with the following exception. It is readily distinguished from *Cynorchis* by the inverted flowers.

1. **A. occidentalis,** *Lindl. in Journ. Linn. Soc.* vi. 139. Plant 1¼ ft. high, densely hispidulous-pubescent. Pseudobulb narrowly oblong, 1½ in. long. Stem with 2, acuminate sheaths. Leaves basal, ovate, subacuminate, ciliolate, variegated, 1½ in. long. Racemes 5 in. long, lax. Bracts lanceolate, acuminate, 3–4 lin. long. Pedicels 4–6 lin. long. Flowers inverted, orange. Dorsal sepal ovate, obtuse or apiculate, 3 lin. long; lateral obliquely ovate-oblong, subacute, 3¼ lin. long. Petals very broadly quadrate-ovate, crenulate, 2 lin. long; apex shortly bidentate, with equal or unequal, obtuse teeth. Lip 5 lin. long, cuneate, shortly trilobed at the apex; lobes ovate-triangular, subacute or apiculate; front lobe with a thickened median line from the base to the apex; spur cylindrical, curved, slightly dilated above, 8–9 lin. long. Anther channels short, scarcely ½ lin. long. Stigmatic processes large, rounded. Rostellum trilobed; front lobe triangular, obtuse, a little concave or cucullate; side lobes a little longer than the anther channels and adnate to them at the base.—*Cynosorchis occidentalis*, Durand & Schinz, Conspect. Fl. Afr. v. 92.

Upper Guinea. Niger Territory: Nupe; in a ravine near Jeba, only one specimen seen, *Barter*, 1487!

A pretty species. Leaves marked like *Anœctochilus argenteus.*

43. **SATYRIUM,** Sw.; Benth. et Hook. f. Gen. Pl. iii. 629.

Sepals subequal or the lateral broader, spreading or reflexed. Petals more or less united to the sepals at the base, similar to or

narrower than the odd or front sepal. Lip superior, sessile at the base of the column, erect, galeate or cucullate, base more or less united to the lateral sepals, produced behind into a pair of descending spurs or sacs, rarely without a sac or with a pair of additional sacs outside the normal pair. Column erect under the lip, short or somewhat elongated, divided at the apex into two lobes, the upper convex or rarely concave, bearing the pulvinate stigma on its anterior surface, the lower anticous and forming the rostellum. Anther hanging under the rostellum or horizontal, cells nearly parallel; pollinia granular, each with a slender stipes and gland, or rarely the glands united. Ovary and pedicel not twisted.—Terrestrial herbs with undivided tubers. Leaves few and basal, or more numerous and cauline, decreasing upwards into the bracts. Spikes usually dense or many-flowered; flowers small or medium-sized. Bracts membranous, sometimes large, often reflexed after flowering.

A genus of about 100 species, most numerous in extra-tropical South Africa, with about five representatives in the Mascarene Islands and one in India. It is readily distinguished from other genera of *Diseæ* by the dorsal position of the relatively large two-spurred lip, with the odd sepal in front.

*Lip with two spurs, slender or tapering at the apex, and longer or rarely shorter than the limb.

Leaves two, basal, suborbicular, appressed to the ground (not known in 3).

Lateral sepals oblong, 7–9 lin. long.

Spurs 9 lin. long . . . . . 1. *S. bifolium.*

Spurs 5 lin. long . . . . . 2. *S. Carsoni.*

Lateral sepals linear, 5–6 lin. long . . . 3. *S. cheirophorum.*

Lateral sepals oblong, 2–4 lin. long.

Lip half united to the lateral sepals . . . 4. *S. Johnsoni.*

Lip a fifth united to the lateral sepals . . 5. *S. orbiculare.*

Leaves two or more, usually cauline, or more or less erect or ascending (not known in 6, 8 and 19).

Lip with a pair of short sacs in addition to the usual spurs.

Lip $2\frac{1}{4}$ lin. long, and as broad . . . . 6. *S. sacculatum.*

Lip $1\frac{3}{4}$ lin. long, slightly over half as broad . 7. *S. shirense.*

Lip with a pair of spurs only.

Spurs over an inch long . . . . . 8. *S. longissimum.*

Spurs under an inch long.

Spurs much diverging from the pedicels.

Spurs much incurved.

Lip 2–$2\frac{1}{4}$ lin. long . . . . 9. *S. riparium.*

Lip 3–$3\frac{1}{2}$ lin. long . . . . 10. *S. Volkensii.*

Spurs recurved . . . . . 11. *S. minax.*

Spurs parallel to the pedicels or nearly so.

Lip 2–$2\frac{1}{2}$ lin. long, somewhat fleshy.

Bracts reflexed after flowering (Eastern species).

Lip with basal third united to the lateral sepals.

Spurs $3\frac{1}{2}$ lin. long . . . . 12. *S. elongatum.*

Spurs 6 lin. long . . . . . 13. *S. chlorocorys.*

Lip with basal fourth united to the lateral sepals . . . . 14. *S. Krænzlinii.*
Bracts not reflexed after flowering (Angolan species) . . . . . 15. *S. mechowianum.*
Lip $2\frac{1}{2}$–4 lin. long, somewhat membranous.
Lip as broad as long . . . . 16. *S. coriophoroides.*
Lip longer than broad.
Spurs as long as or longer than the lip.
Sepals more or less distinctly longer than the lip.
Spikes dense (Eastern species).
Lip $3\frac{1}{2}$–4 lin. long.
Spurs twice as long as the sepals . . . . 17. *S. densum.*
Spurs slightly longer than the sepals . . . . 18. *S. Buchanani.*
Lip 2–$2\frac{1}{2}$ lin. long.
Spurs not twice as long as the sepals.
Lip strongly constricted below the reflexed apex . 19. *S. Kirkii.*
Lip scarcely constricted below the suberect apex . 20. *S. niloticum.*
Spurs twice as long as the sepals or more . . . . 21. *S. crassicaule.*
Spikes rather lax (Angolan species) 22. *S. Ivantalæ.*
Sepals more or less distinctly shorter than the lip (Abyssinian species).
Spurs 5–$6\frac{1}{2}$ lin. long . . . 23. *S. brachypetalum.*
Spurs $2\frac{1}{2}$–3 lin. long . . . 24. *S. Schimperi.*
Spurs not or scarcely as long as the lip.
Lip 3–4 lin. long.
Lip over half as broad as long . . 25. *S. zombense.*
Lip half as broad as long . . 26. *S. occultum.*
Lip 2–$2\frac{3}{4}$ lin. long . . . . 27. *S. Nuttii.*
Lip 6 lin. long . . . . . 28. *S. Welwitschii.*
**Lip with two short, obtuse sacs, much shorter than the limb.
Sepals and petals 5–6 lin. long.
Column 3 lin. long . . . . . 29. *S. breve.*
Column 2–$2\frac{1}{4}$ lin. long.
Spurs 1–$1\frac{1}{4}$ lin. long . . . . . 30. *S. leucocomos.*
Spurs scarcely $\frac{1}{2}$ in. long . . . . 31. *S. paludosum.*
Sepals and petals 2 lin. long . . . . 32. *S. longibracteatum.*
***Lip without a sac . . . . . 33. *S. Mechowii.*

1. **S. bifolium,** *A. Rich. in Ann. Sc. Nat. sér.* 2, xiv. 273, *t.* 18, *fig.* 2. Tubers ovoid-oblong, 7–13 lin. long. Plant $1\frac{1}{4}$–$1\frac{3}{4}$ ft. high, with two suborbicular horizontal leaves at the base, and five to seven oblong-lanceolate, subobtuse sheaths above. Leaves 2–4 in. broad. Racemes oblong, $2\frac{1}{2}$–$4\frac{1}{4}$ in. long, rather dense. Bracts ovate or ovate-lanceolate, acute, 9–14 lin. long. Pedicels 5–6 lin. long. Sepals 7–9 lin. long; odd one cuneate-oblong, obtuse; lateral much broader. Petals united for a fifth of their length to the sepals, narrower than

the odd one. Lip galeate, 7–8 lin. long, the basal fourth united to the lateral sepals; mouth broad, with broad reflexed margin; apex broad, obtuse, crenulate, erect; spurs linear, tapering to the apex, curved, 9 lin. long. Column 4 lin. long; stigma reniform-orbicular, obscurely crenulate; rostellum oblong, obtuse, with reflexed sides and apex.—A. Rich. Tent. Fl. Abyss. ii. 300, t. 92.

Nile Land. Abyssinia: Tigre; Mount Sholoda, near Adowa, *Quartin-Dillon;* between Maigouagoua and Debra Sina, *Quartin-Dillon,* 233! Sana Dist., on mountains near Dochli, *Schimper,* 1554! Begemeder; near Mahdera Mariam, 6500 ft., *Schimper,* 1232! without precise locality, *Schimper,* 619!

2. **S. Carsoni,** *Rolfe.* Tuber oblong, $1\frac{1}{4}$ in. long. Plant $1\frac{1}{4}$–$1\frac{1}{2}$ ft. high, with two suborbicular, horizontal leaves at the base, $1\frac{3}{4}$–$2\frac{1}{2}$ in. broad, and four or five lanceolate sheaths above. Racemes oblong, 3–5 in. long, rather lax. Bracts ovate-oblong, subacute, $\frac{3}{4}$–$1\frac{1}{4}$ in. long. Pedicels 5–6 lin. long. Sepals 7–8 lin. long; odd one lanceolate-oblong, obtuse; lateral broader. Petals united for a sixth of their length to the sepals, and similar to the odd one. Lip galeate, subcompressed, 7 lin. long, the basal fourth united to the lateral sepals; mouth roundish above, narrowed below; apex broadly oblong, subobtuse, somewhat recurved; spurs tapering from a rather broad base, slightly curved, 5 lin. long. Column $3\frac{1}{2}$ lin. long; stigma broadly rounded, obtuse; rostellum oblong, subobtuse, with reflexed sides and apex.

Mozamb. Dist. British Central Africa: Urungu; South of Lake Tanganyika, at Fwambo, *Carson,* 3! 5! and Kambole, 5000 ft., *Nutt!*

3. **S. cheirophorum,** *Rolfe.* Plant somewhat slender, with a few lanceolate sheaths on the stem; base not seen. Raceme $2\frac{1}{2}$–4 in. or more long, lax. Bracts lanceolate, acuminate, 8–12 lin. long. Pedicels 4 lin. long. Sepals 6 lin. long; odd one linear-oblong, obtuse; lateral broader, somewhat spreading. Petals united for a third of their length to the sepals, and similar to the odd one. Lip galeate, subcompressed, $4\frac{1}{2}$ lin. long, the basal third united to the lateral sepals; mouth rather narrow; apex triangular-ovate, apiculate, reflexed; spurs linear, slightly curved, 6 lin. long. Column 4 lin. long; stigma broadly ovate; rostellum broad, tridenticulate.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, near Blantyre, *Last!*

4. **S. Johnsoni,** *Rolfe.* Tuber oblong, 8 lin. long. Plant 9 in. high, with a pair of orbicular, horizontal leaves at the base, 10 lin. broad, and five or six cauline, lanceolate, acute sheaths above. Raceme oblong, 2 in. long, rather lax. Bracts ovate-lanceolate, acute, 5–7 lin. long. Pedicels $2\frac{1}{2}$–3 lin. long. Sepals $2\frac{3}{4}$ lin. long; odd one oblong-lanceolate, subacute; lateral much broader. Petals united for nearly half their length to the sepals, and similar to the odd one. Lip galeate, carinate, subcompressed, 3 lin. long, basal half or rather less united to the lateral sepals; mouth rather narrow; apex broad, obtuse,

somewhat reflexed; spurs linear, somewhat curved, $2\frac{1}{4}$ lin. long. Column $2\frac{1}{4}$ lin. long; stigma broadly ovate, obtuse; rostellum bilobed?

Mozamb. Dist. Portuguese East Africa: mountains east of Lake Nyasa, *Johnson!*

5. **S. orbiculare,** *Rolfe.* Tuber subglobose, 4 lin. long. Plant 6–7 in. high, with a pair of orbicular, horizontal leaves at the base, 1 in. broad, and two or three ovate-lanceolate, apiculate sheaths above. Raceme oblong, rather short, few-flowered. Bracts ovate, acute, 5–6 lin. long. Pedicels 3 lin. long. Sepals $2\frac{1}{2}$–$2\frac{3}{4}$ lin. long; odd one lanceolate-oblong, subacute; lateral rather longer and twice as broad. Petals united for a fifth of their length to the sepals, and similar to the odd one. Lip galeate, carinate, subcompressed, 3 lin. long, the basal fourth united to the lateral sepals; mouth ovate; narrow margin and obtuse apex reflexed; spurs linear, curved, 4 lin. long. Column 2 lin. long; stigma broadly ovate, obtuse; rostellum ovate-oblong, obtuse, obscurely trilobed.

Mozamb. Dist. British Central Africa; Kambole, South-West of Lake Tanganyika, 5000 ft., *Nutt!*

6. **S. sacculatum,** *Rolfe.* Plant $2\frac{1}{2}$ ft. high, with numerous ovate lanceolate sheaths, the lower longer and tubular. Leaves not seen. Raceme 3 in. long, rather narrow, many-flowered. Bracts ovate-lanceolate, acute, 5–6 lin. long. Pedicels 3 lin. long. Sepals 2 lin. long, odd one linear-oblong; lateral oblong, much broader. Petals united for nearly half their length to the sepals, and similar to the odd one. Lip galeate, $2\frac{1}{2}$ lin. long, and the same in breadth; basal third united to the lateral sepals; mouth narrow owing to the inflexed sides; apex incurved with narrow sharply reflexed margin; spurs linear-oblong, nearly straight, 4 lin. long; basal angles of galea with an additional pair of short spurs, $\frac{1}{2}$–$\frac{3}{4}$ lin. long, in front of the normal ones. Column 2 lin. long; stigma broadly ovate, obtuse; rostellum trilobed, side lobes minute and tooth-like, front lobe much larger and trowel-shaped.—*S. coriophoroides*, var. *sacculata*, Rendle in Journ. Bot. 1895, 295.

Nile Land. British East Africa: Ruwenzori; Batagu, 10,000 ft., *Scott-Elliot*, 7964! Nyamwamba, 10,000 ft., in peat moss, *Scott-Elliot*, 8097!

Differs from *S. coriophoroides*, A. Rich., in numerous particulars, especially in the presence of an additional pair of small spurs, a character only found in *S. shirense*, Rolfe.

7. **S. shirense,** *Rolfe.* Plant $1\frac{1}{2}$–$1\frac{3}{4}$ ft. high, with two alternate leaves above the base, one or two tubular sheaths below the leaves, and three oblong-lanceolate ones above. Leaves elliptic-oblong, subobtuse, $3\frac{1}{2}$–4 in. long, $1\frac{1}{2}$–$1\frac{3}{4}$ in. broad. Raceme oblong, narrow, 2–3 in. long. Bracts ovate-lanceolate, acute, 5–8 lin. long. Pedicels $2\frac{1}{2}$ lin. long. Sepals 2 lin. long; odd one cuneate-oblong, obtuse; lateral rather longer and nearly twice as broad. Petals united for half their length to the sepals, and half as broad as the odd one. Lip galeate, carinate, $1\frac{3}{4}$ lin. long, slightly more than half as broad, basal half united to

the lateral sepals; mouth oblong; narrow margin and obtuse apex reflexed; spurs linear-filiform, 4–4½ lin. long; basal angle of galea with a pair of additional triangular sacs, ½–¾ lin. long. Column 1½ lin. long; stigma broadly rounded, sides somewhat reflexed; rostellum very short, roundish, with reflexed apex, and a pair of minute teeth at the base.

Mozamb. Dist. British Central Africa: Shire Highlands, *Buchanan!*

8. **S. longissimum,** *Rolfe.* Plant tall, apex only seen. Raceme rather lax, 5–6 in. long. Bracts ovate, subacute, 7–14 lin. long. Pedicels 4 lin. long. Flowers white. Sepals 6 lin. long, the odd one narrowly oblong, obtuse; lateral broader, spreading. Petals united for a quarter of their length to the sepals, and similar to the odd one. Lip galeate, 5 lin. long, the basal fourth united to the lateral sepals; mouth broad; apex broad, reflexed, very obtuse, somewhat plicate and apiculate; spurs elongate-linear, 15–20 lin. long. Column 4 lin. long; stigma obcordate; rostellum trilobed, side lobes broadly triangular-falcate, front lobe orbicular, reflexed, much larger than the side lobes.

Mozamb. Dist. South-east Tropical Africa, without locality!

Described from a specimen presented to Kew by Mr. J. O'Brien, who received it without a precise indication of locality.

9. **S. riparium,** *Reichb. f. in Flora*, 1865, 183. Tubers ovoid-oblong, ½–¾ in. long. Plant 1½ ft. high, with six or seven tubular sheaths, upper lanceolate, acute at the apex. Leaves on barren shoot (one only seen), ovate, obtuse, 1½ in. long, 9 lin. broad. Raceme elongated, 6 in. long, lax. Bracts ovate, acute, 3–8 lin. long. Pedicels 2½–3 lin. long. Flowers waxy yellow. Sepals 2½–3 lin. long; odd one cuneate-oblong, obtuse; lateral falcate-oblong, subobtuse, rather longer and much broader. Petals united for two-thirds of their length to the sepals, and slightly narrower than the odd one. Lip galeate, carinate, 3–3½ in. long, basal half or rather more united to the lateral sepals; mouth rather broad; apex constricted behind the broadly ovate, subacute, reflexed limb; spurs linear-filiform, curved, 9–10 lin. long. Column 2½ lin. long; stigma broadly obcordate-oblong, inflexed at the sides; rostellum oblong, obtuse, laterally compressed.

Lower Guinea. Angola: Huilla; by the side of the River Humpata, very sparsely distributed, *Welwitsch*, 730!

10. **S. Volkensii,** *Schlechter in Engl. Jahrb.* xxiv. 425. Tubers ovoid-oblong, 7–14 lin. long. Plant stout, 2¼ ft. high, with numerous acute sheaths. Leaves two, on basal barren shoots, ovate-oblong, obtuse or apiculate, 4½–5 in. long, 2–2½ in. broad. Racemes elongate, 12–14 in. long, rather lax. Bracts ovate-lanceolate, acute or acuminate, 5–12 lin. long. Pedicels 3 lin. long. Sepals 2 lin. long; odd one oblong, obtuse; lateral nearly twice as broad. Petals united for half their length to the sepals, and similar to the odd one. Lip galeate, carinate, 2–2¼ lin. long, half united to the lateral sepals; mouth roundish-oblong; narrow margin

and obtuse apex reflexed; spurs linear-filiform, much curved, 6–7 lin. long. Column $1\frac{3}{4}$ lin. long; stigma obovately rounded; rostellum triangular-ovate, with a pair of small teeth at the base.—*S. brachypetalum*, Kränzl. in Engl. Pfl. Ost-Afr. C. 153, in part (not of A. Rich.).

Mozamb. Dist. German East Africa: Kilimanjaro; Marangu, 4700 ft., *Volkens*, 270!

11. **S. minax,** *Rolfe*. Tubers oblong, 1–$1\frac{1}{2}$ in. long. Plant $1\frac{1}{4}$–3 ft. high, with several ovate or lanceolate acute sheaths above, lower sheaths tubular. Stems reddish. Leaves two, on basal barren shoots, elliptic-oblong, subobtuse or apiculate, 3–6 in. long, $\frac{1}{2}$–2 in. broad, sometimes with a single, shorter leaf below the middle of the stem. Raceme elongate, somewhat lax, 8–11 in. long. Flowers white, spurs and hood tinged with pink. Bracts ovate-lanceolate, acute, 6–10 lin. long. Pedicels 3 lin. long. Sepals $2\frac{1}{2}$–3 lin. long; odd one lanceolate-oblong, subacute; lateral falcately cuneate-oblong, longer and twice as broad. Petals united for half their length or more to the sepals, cuneate, obtuse, ciliate, and more membranous than the odd sepal. Lip galeate, subcompressed, carinate, $2\frac{1}{2}$–3 lin. long, basal half united to the lateral sepals; mouth rather narrow; margin and obtuse apex reflexed; spurs narrowly linear, recurved, 4–5 lin. long. Column $1\frac{3}{4}$–2 lin. long; stigma ovate-oblong, obtuse; rostellum trilobed, obtusely keeled behind, side lobes oblong, small, front lobe much larger, triangular-ovate, subobtuse, with reflexed sides.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, near Blantyre, *Last!* Blantyre, open woods on hillside, *Scott!*

12. **S. elongatum,** *Rolfe*. Plant stout, $2\frac{1}{4}$–$2\frac{1}{2}$ in. high, with six or seven oblong-lanceolate sheaths, $2\frac{1}{2}$–4 in. long, more or less tubular below, especially the lower. Raceme elongate, 10–12 in. long, somewhat dense. Bracts ovate-lanceolate, acute, 6–10 lin. long. Pedicels 3 lin. long. Sepals 2 lin. long; odd one cuneate-oblong, obtuse; lateral rather longer and much broader. Petals united for nearly half their length to the sepals, and similar to the odd one. Lip galeate, rather fleshy, subcompressed, 2 lin. long, basal third or rather more united to the lateral sepals; mouth rather narrow, the narrow margin and obtuse apex reflexed; spurs linear, curved, $3\frac{1}{2}$ lin. long. Column $1\frac{3}{4}$ lin. long; stigma broadly obovate-rounded, sides somewhat inflexed; rostellum triangular-ovate, subcompressed, with a pair of small lateral teeth.

Mozamb. Dist. British Central Africa: Urungu; Fwambo, South of Lake Tanganyika, *Carson*, 60!

13. **S. chlorocorys,** *Reichb. f. ex Oliv. in Trans. Linn. Soc. ser.* 2, ii. 350 (*name only*). Plant stout, $\frac{3}{4}$–$1\frac{1}{2}$ ft. high, 3–4-leaved near the base, with two or three lanceolate sheaths above. Leaves elliptic- or ovate-oblong, subacute or apiculate, $2\frac{1}{2}$–$4\frac{1}{2}$ in. long, 1–$1\frac{3}{4}$ in. broad. Raceme elongate, 4 or more in. long, somewhat lax. Bracts ovate or ovate-

lanceolate, acute, 7–10 lin. long. Pedicels 3–4 lin. long. Flowers green. Sepals 2–2¼ lin. long, odd one oblong, obtuse; lateral twice as broad. Petals united for half their length to the sepals, spathulate. Lip galeate, keeled, 2–2½ lin. long, the basal third united to the sepals; sides inflexed at the base; mouth suborbicular above, nearly closed below; apex very broad, slightly reflexed; spurs linear, slightly curved, 6 lin. long. Column 1¾ lin. long; stigma broadly obovate-rounded; rostellum trilobed, side lobes oblong, submembranous, front lobe longer, laterally dilated, obtuse, fleshy, inflexed.

Mozamb. Dist. German East Africa: Kilimanjaro, 7000–10,000 ft., *Johnston*, 182! *Thomson!*

14. **S. Krænzlinii,** *Rolfe.* Tubers oblong, 7–8 lin. long. Plant 1½ ft. high, 1- or 2-leaved near the base, with three lanceolate, acute sheaths above. Leaves ovate-oblong, subobtuse, 4 in. long, 1½ in. broad. Raceme 5 in. long, rather lax. Bracts ovate-lanceolate, acute, 5–9 lin. long. Pedicels 3–4 lin. long. Sepals 2 lin. long; odd one cuneate-oblong, obtuse; lateral rather longer and much broader. Petals united for half their length to the sepals, and similar to the odd one. Lip galeate, subcompressed, 2¼ lin. long, basal fourth united to the lateral sepals; mouth rather narrow; apex short and broad, slightly reflexed; spurs linear, slightly curved, 5 lin. long. Column 2 lin. long; stigma obovately rounded, crenulate; rostellum trilobed, side lobes oblong, small, front lobe oblong, obtuse, larger.—*S. brachypetalum*, Kränzl. in Engl. Pfl. Ost-Afr. C. 153, in part (not of A. Rich.).

Mozamb. Dist. German East Africa: Kilimanjaro; Marangu, *Volkens*, 999!

15. **S. mechowianum,** *Kränzl. in Engl. Jahrb.* xvii. 65. Plant 14–16 in. high, leafy from the base. Leaves cauline, two or three, lanceolate, acute or acuminate, with long ample sheaths, the longest 8 in. long by 12–14 lin. broad, the remainder gradually decreasing upwards. Raceme dense and congested, many-flowered. Bracts very large, much longer than the flowers, spreading upon flowering, before and after erect, never reflexed. Flowers among the smallest in the genus, white. Odd sepal united with the petals to the middle into a cuneate limb, the free parts of the three united organs linear, obtuse; lateral twice as broad, oblong, obtuse, concave, very minutely fimbriate, slightly twisted. Lip cucullate, subcompressed behind, very broad; spurs acute, much shorter than the pilose ovary, but equalling the sepals, petals and lip. Column elongate.

Lower Guinea. Angola: Malange, *Mechow*, 284.

Only known to me from the description, but said to be most allied to *S. coriophoroides*, A. Rich.

16. **S. coriophoroides,** *A. Rich. in Ann. Sc. Nat. sér.* 2, xiv. 274, *t.* 18, *fig.* 3. Tuber ovoid-oblong, 1¼–1½ in. long. Plant stout, 1½–2¾ ft. high. Leaves cauline, numerous, oblong-lanceolate, acute or obtuse, sheathing at the base, 2–4 in. long, the lower one or two reduced to tubular sheaths, the remainder gradually diminishing in size upwards;

leaves two, on barren shoots at the base, rather broader. Raceme oblong or elongate, 4–8 in. long, very dense. Bracts ovate-lanceolate, acute or acuminate, 6–12 lin. long. Pedicels 3 lin. long. Sepals 3 lin. long, odd one linear-oblong, obtuse; lateral rather longer and twice as broad. Petals united for half their length to the sepals, similar to the odd one. Lip galeate, 3 lin. long, and quite as broad, half the broad basal angle united to the lateral sepals; mouth broad, with a narrow reflexed margin; apex obtuse; spurs linear, curved, 5–6 lin. long. Column much curved, 3 lin. long; stigma broadly ovate; rostellum triangular, subacute, with a pair of minute teeth at the base.—A. Rich. Tent. Fl. Abyss. ii. 298, t. 89. *S. macrostachyum*, Hochst. ex A. Rich. l.c. 298.

Nile Land. Abyssinia: Tigre; Mt. Sholoda, *Quartin-Dillon;* Sana Dist., on mountains near Dochli, *Schimper*, 1606! Shire; near Avar Semmaka, *Quartin-Dillon;* without precise locality, *Schimper*, 620! *Schimper*, 1297! *Quartin-Dillon & Petit*, 231!

17. **S. densum,** *Rolfe.* Plant stout, 2–2¼ ft. high, 2-leaved, with a broad tubular sheath below, and several narrower acute ones above. Leaves oblanceolate- or obovate-oblong, subobtuse or apiculate, 6–7 in. long, 1¼–2¾ in. broad. Raceme elongate, 7–9 in. long, dense-flowered. Bracts ovate or ovate-lanceolate, acute or subacute, ¾–1 in. long. Pedicels 4 lin. long. Sepals reflexed, 4 lin. long, the odd one narrowly oblong, subobtuse; lateral nearly twice as broad, spreading. Petals reflexed, united for a third of their length to the sepals, and similar to the odd one. Lip galeate, subcompressed, 3½ lin. long, the basal third united to the lateral sepals; mouth rather narrow; apex broadly triangular-ovate, apiculate, reflexed; spurs elongate-linear, slightly curved, 8–9 lin. long. Column 3½ lin. long; stigma broadly ovate; rostellum trilobed, side lobes minute and tooth-like, front lobe spathulate, with the sides reflexed towards the base and a broadly ovate orbicular apex.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, top of Zomba, *Buchanan*, 303!

18. **S. Buchanani,** *Rolfe.* Tuber oblong, ¾–1 in. long. Plant stout, 1¾–2 ft. high, 2–3-leaved, with two broad tubular sheaths below the leaves, and five or six lanceolate ones above. Leaves broadly elliptic-oblong or ovate-oblong, subacute or abruptly apiculate, 3–6 in. long, 1¼–3 in. broad. Raceme oblong or elongate, 4–7 in. long, usually dense-flowered, rarely somewhat lax. Bracts ovate-lanceolate, acute or subacuminate, 8–11 lin. long. Pedicels 3–4 lin. long. Flowers red. Sepals 5–6 lin. long; odd one oblong-lanceolate, obtuse; lateral slightly broader, spreading. Petals united for nearly half their length to the sepals, and similar to the odd one. Lip galeate, subcompressed, 3½–4 lin. long, the basal fourth united to the lateral sepals; mouth rather narrow; apex broadly ovate, apiculate, reflexed; spurs narrow, curved, 5–7 lin. long. Column 3–3½ lin. long; stigma broadly ovate; rostellum broad, trilobed, side lobes rounded, front lobe longer and acute.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, top of Zomba, *Buchanan*, 307! Near Blantyre, *Last!* Mwata Manga stream, 4000ft., *Kirk!* Zambesiland, *Kirk!* Nyasaland, *Buchanan!*

19. **S. Kirkii,** *Rolfe.* Plant tall, 1¼ ft. or more high, upper part of raceme with several lanceolate, subacute sheaths, 1½–3 in. high; base not seen. Raceme elongate, 6–10 in. long, dense-flowered. Bracts ovate-lanceolate, acute, 6–9 lin. long. Pedicels 4 lin. long. Sepals 3 lin. long; odd one narrowly oblong, subobtuse; lateral rather broader, spreading. Petals united for a quarter of their length to the sepals, similar to the odd one. Lip galeate, subcompressed, 2½ lin. long, the basal third united to the lateral sepals, strongly constricted behind the apex; mouth narrow; apex broad, obtuse, slightly crenulate, reflexed; spurs linear-filiform, curved, 3½–4½ lin. long. Column 2 lin. long; stigma broadly ovate; rostellum trilobed, side lobes triangular-falcate, front lobe pandurate.

Mozamb. Dist. British Central Africa: Nyasaland; near Mt. Sochi, *Kirk!* and without precise locality, *Buchanan!*

20. **S. niloticum,** *Rendle in Journ. Bot.* 1895, 296. Plant stout, over 1½ ft. long, upper part with two lanceolate sheath-like leaves, 3–4 in. long, base not seen. Raceme oblong, 4 in. long, many-flowered. Bracts lanceolate or ovate-lanceolate, acute, ¾–1¼ in. long. Pedicels 4 lin. long. Sepals 3 lin. long; odd one oblong, obtuse, lateral slightly broader, spreading. Petals united for a quarter of their length to the sepals, and similar to the odd one. Lip galeate, subcompressed, 2½ lin. long, the basal fourth united to the lateral sepals; mouth rather narrow, slightly constricted below the short, broad, obtuse apex; spurs narrow, curved, 4½ lin. long. Column 2¼ lin. long; stigma oblong; rostellum broad, tridentate.

Nile Land. British East Africa: Kavirondo; Nandi Range, 7000–8000 ft., in a marsh, *Scott-Elliot*, 6938!

21. **S. crassicaule,** *Rendle in Journ. Bot.* 1895, 295. Plant stout, 2–3 ft. high, with several lanceolate or oblong-lanceolate, cauline leaves 4–16 in. long, ½–1½ in. broad. Raceme oblong, 4–9 in. long, dense-flowered. Bracts ovate-lanceolate, subacuminate, ½–1 in. long. Pedicels 3–4 lin. long. Sepals 2–2½ lin. long; odd one elliptic-oblong, obtuse; lateral much broader, spreading. Petals united for a quarter of their length to the sepals, and similar to the odd one. Lip galeate, 2 lin. long, very broad, the basal third united to the lateral sepals; mouth broad, sides constricted below the short, broadly triangular, somewhat reflexed apex; spurs narrow, curved, 5½ lin. long. Column 1¾ lin. long; stigma broadly ovate; rostellum trilobed, front lobe orbicular, side lobes smaller and tooth-like.

Nile Land. British East Africa: Ruwenzori; Wimi, 6000–7000 ft., in marshy places, *Scott-Elliot*, 7851! and on sunny hillsides at the same elevation, *Scott-Elliot*, 7812! Butagu, 10,000 ft., *Scott-Elliot*, 7949! 8008, in part! 8059.

22. **S. Ivantalæ,** *Reichb. in Flora*, 1865, 183. Tubers ovoid or globose, 6–10 lin. long. Plant 1–1½ ft. high, 2–3-leaved. Leaves elliptic-oblong, subacute, 4–4½ in. long, 1¼–1¾ in. broad, with a basal one reduced to a broad sheath, and about three lanceolate, acute sheaths above. Raceme elongate-oblong, 3–4 in. or more long. Bracts ovate-lanceolate, acuminate, 7–10 lin. long. Pedicels 3 lin. long. Flowers white, striped with rose. Sepals 4 lin. long; the odd one linear-oblong, subobtuse; lateral slightly broader, spreading. Petals united for half their length to the sepals, and similar to the odd one. Lip galeate, subcompressed, 3 lin. long, half united to the lateral sepals, mouth rather narrow; apex very obtuse; spurs linear, slightly curved, 4 lin. long. Column 2¾ lin. long; stigma very broad; rostellum very broad, obtuse, with a pair of small triangular teeth at the angles.

Lower Guinea. Angola: Huilla; near Lake Ivantala, not infrequent in marshes, and between Quilengues and Ivantala, frequent, *Welwitsch*, 729!

23. **S. brachypetalum,** *A. Rich. Tent. Fl. Abyss.* ii. 299, *t.* 90. Tuber ovoid-oblong, 6–10 lin. long. Plant stout, 1–1½ ft. high. Leaves cauline, numerous, oblong-lanceolate, subacute, 1½–3½ in. long, the lower reduced to a sheath, the rest diminishing upwards; leaves of the basal barren shoots one or two, longer than the others. Raceme elongate, 3–6 lin. long, somewhat dense. Bracts oblong-lanceolate, acute or acuminate, 7–9 lin. long. Pedicels 3 lin. long. Sepals 2¾ lin. long, minutely ciliolate; odd one linear-oblong, obtuse; lateral slightly longer, and nearly twice as broad. Petals united for half their length to the sepals, similar to the odd one. Lip galeate, 3 lin. long by half as broad; basal half united to the lateral sepals; mouth roundish-oblong, its margin, as well as the broad obtuse apex, reflexed; spurs linear, curved, 5–6½ lin. long. Column 2½ lin. long; stigma obovately rounded, crenulate; rostellum ovate, subacute.

Nile Land. Abyssinia: Tigre; Mt. Heja, near Adowa, north side, 9000 ft., *Schimper*, 550! Shire; on mountains, among herbs, *Quartin-Dillon*. Begemeder; Debra Tabor, 8500 ft., *Schimper*, 1263! Jan Meda, 8500 ft., *Schimper*, 1297A!

24. **S. Schimperi,** *Hochst. ex A Rich. Tent. Fl. Abyss.* ii. 300, *t.* 91. Tubers ovoid-globose or ovoid-oblong, 9–11 lin. long. Plant ½–1 ft. high, 2-leaved, with two broad sheaths below the leaves and two lanceolate ones above. Leaves ovate-oblong, subobtuse, 2–3 in. long, 1–1½ in. broad. Raceme 2–3 in. long, rather lax. Bracts ovate or ovate-lanceolate, acute, 6–10 lin. long. Pedicels 2½–3 in. long. Sepals 2¼–2½ lin. long; odd one oblong, obtuse; lateral broader. Petals united for half their length to the sepals, and similar to the odd one. Lip galeate, subcompressed, keeled, 2½–3 lin. long, the basal half or rather more united to the lateral sepals; mouth oblong; apex with very broad, short, apiculate, reflexed limb; spurs linear, curved, 2½–3 lin. long. Column 2 lin. long; stigma large, broadly ovate-oblong; rostellum shortly bilobed.

Nile Land. Abyssinia: Tigre; near Maigouagoua, *Quartin-Dillon!* Semen; near Enjedcap, *Schimper*, 1185! Begemeder; Debra Tabor, 8500 ft., *Schimper*,

1331 ! Mt. Woa, Mohassera Mariam, *Schimper*, 1252 ! without precise locality, *Schimper*, 593 !

25. **S. zombense,** *Rolfe.* Tuber oblong, 1 in. long. Plant 1¼–1½ ft. high, about 4-leaved, with two broad basal sheaths. Leaves oblong-lanceolate, apiculate, 1½–3½ in. long, 4–6 lin. broad. Raceme oblong, 2–4 in. long, dense-flowered. Bracts ovate-lanceolate, acute, 6–8 lin. long. Pedicels 2½ lin. long. Sepals 3½ lin. long; odd one narrowly oblong, obtuse; lateral twice as broad, spreading. Petals united for half their length to the sepals, and similar to the odd one. Lip galeate, 4 lin. long, the basal sixth united to the lateral sepals; mouth rather open; apex very broad and truncate, slightly reflexed; spurs linear-oblong, 3 lin. long. Column 3 lin. long; stigma broadly ovate; rostellum tridenticulate.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, top of Zomba, *Buchanan*, 304 !

26. **S. occultum,** *Rolfe.* Plant 1 ft. or more high, 3–4-leaved; base not seen. Leaves lanceolate-oblong, subacute, 2½–8 in. long, ½–1¼ in. broad. Raceme oblong, 2–4 in. long, many-flowered. Bracts lanceolate or oblong-lanceolate, ¾–1¼ in. long. Pedicels 3 lin. long. Sepals 3 lin. long; odd one narrowly oblong, subobtuse; lateral twice as broad, spreading. Petals united for half their length to the sepals, rather narrower than the odd one. Lip galeate, subcompressed, 3–3½ lin. long, the basal fourth united to the lateral sepals; mouth rather narrow; apex broad and obtuse, reflexed; spurs linear, slightly curved, 2 lin. long. Column 2¾ lin. long; stigma short and very broad; rostellum trilobed.

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan*, 287 !

27. **S. Nuttii,** *Rolfe.* Plant 2 ft. or more high, 2- or more-leaved, with three lanceolate leaves above; base not seen. Leaves oblong-lanceolate, subacute, 6–7 in. long, 1–1½ in. broad. Raceme 4–5 in. long, rather narrow. Bracts ovate-lanceolate, acute, 4–8 lin. long. Pedicels 3 lin. long. Sepals 2¾ lin. long, odd one linear-oblong, obtuse; lateral nearly twice as broad. Petals united for half their length to the sepals, and much narrower than the odd one. Lip galeate, 2–2¾ lin. long, basal fifth united to the lateral sepals; mouth broad with sides inflexed near the base; apex very broad, obtuse, and minutely crenulate; spurs linear-oblong, slightly curved, 2 lin. long. Column 2 lin. long; stigma broadly rounded, obtuse; rostellum bilobed.

Mozamb. Dist. British Central Africa: Kamboli, South-west of Lake Tanganyika, 5000 ft., *Nutt !*

28. **S. Welwitschii,** *Reichb. f. in Flora*, 1865, 182. Tuber ovoid-oblong, 1¼ in. long. Plant stout, 2 ft. high, 4–7-leaved. Leaves oblong-lanceolate, subacute, 3–7 in. long, ½–1½ in. broad, the two or three

lower reduced to broad tubular sheaths. Racemes 2–4 in. long, dense, many-flowered. Bracts ovate, subacute, 6–10 lin. long. Pedicels 3 lin. long. Flowers violet-purple. Sepals 6–7 lin. long, odd one linear-oblong, obtuse; lateral oblong or ovate-oblong, and twice as broad, spreading. Petals united for half their length to the sepals, and similar to the odd one. Lip galeate, subcompressed, 6 lin. long, the basal third united to the lateral sepals; mouth 1 lin. broad; apex broad and apiculate; spurs linear-oblong, 3–4 lin. long. Column 3½ lin. long; stigma broadly ovate, apiculate; rostellum broad, shortly bilobed, with obtuse lobes.—Rolfe in Bolet. Soc. Brot. vii. 238.

Lower Guinea. Angola: Huilla; Varzea do Ferrao da Sola, and Lopollo, in swamps, *Welwitsch*, 726! and without precise locality, *Antunes*, 16!

29. **S. breve,** *Rolfe*. Plant 1½–1¾ ft. high, with several lanceolate, or oblong-lanceolate, cauline leaves, 2–4½ in. long; lower leaves not seen. Raceme short or oblong, 2–3 in. long, dense. Bracts ovate-lanceolate, acute, 6–9 lin. long. Pedicels 3 lin. long. Sepals 6 lin. long; odd one linear-oblong, obtuse; lateral oblong, and twice as broad, spreading. Petals united for half their length to the sepals, slightly narrower than the odd one. Lip galeate, subcompressed, 5½ lin. long, the basal third united to the lateral sepals; mouth rather narrow; apex broadly rounded, slightly crenulate; spurs oblong, 2 lin. long. Column 3 lin. long; stigma broadly ovate; rostellum broad and stout, bilobed.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, common in the wet months, *Buchanan*, 314!

30. **S. leucocomos,** *Reichb. f. in Flora*, 1865, 182. Plant very stout, 1½–1¾ ft. high, 5–8-leaved. Leaves elliptic-lanceolate, subacute, 3–6 in. long, ¾–1½ in. broad, the two or three lower reduced to broad sheaths. Racemes short and dense, 2 in. or more long, many-flowered. Bracts lanceolate, acute, ¾–1¼ in. long. Flowers white. Pedicels 3–4 lin. long. Sepals 6 lin. long; odd one subspathulate-linear, obtuse; lateral oblong and twice as broad. Petals united for half their length to the sepals, and similar to the odd one. Lip galeate, subcompressed, 4½ lin. long, the basal 2 lin. united to the lateral sepals; mouth 1½ lin. broad; apex broad and very obtuse or retuse; spurs broadly saccate, 1–1¼ lin. long. Column 2 lin. long; stigma broadly triangular-ovate, subobtuse; rostellum broad, tridenticulate.

Lower Guinea. Angola: Huilla; Lopollo, *Welwitsch*, 728!

31. **S. paludosum,** *Reichb. f. in Flora*, 1865, 182. Plant 1¾ ft. high, 5–8-leaved. Leaves lanceolate or oblong-lanceolate, subacute, 2–4 in. long, 3–9 lin. broad, the two lower reduced to broad tubular sheaths. Raceme nearly ovoid, dense, ultimately somewhat elongated, 2 in. or more long. Bracts ovate-lanceolate, subacute, 5–9 lin. long. Pedicels 3 lin. long. Flowers white. Sepals 5 lin. long; odd one linear-oblong, obtuse, with reflexed sides; lateral oblong

and more than twice as broad, spreading. Petals united for nearly half their length to the sepals, and similar to the odd one. Lip galeate, 4–4½ lin. long, the basal third united to the lateral sepals; mouth broad and round; apex very broad and obtuse; spurs broadly saccate, scarcely ½ lin. long. Column 2¼ lin. long; stigma very broad and obtuse; very short, broad, and somewhat bilobed.

Lower Guinea. Angola: Huilla; Lopollo, near the River Ferrao da Sola, in swampy meadows, *Welwitsch*, 727!

32. **S. longibracteatum,** *Rolfe in Bolet. Soc. Brot.* vii. 238. Scape tall, the upper part with three erect, lanceolate subacute sheaths, 1½–2 in. long, base and leaves not seen. Raceme short and dense, 2 in. long, many-flowered. Bracts linear-lanceolate, acute, spreading, much longer than the flowers, ¾–1 in. long. Pedicels 2½ lin. long. Sepals reflexed, obovate-elliptical, obtuse, with revolute margins, 2 lin. long, lateral broader and somewhat spreading. Petals united for a third of their length to the sepals, and similar to the odd one. Lip galeate, 2⅓ lin. long, the basal fifth united to the lateral sepals; mouth 1½ lin. broad; apex broad and obtuse; spurs broadly saccate, obtuse, ⅓ lin. long. Column 1½ lin. long; stigma broadly triangular-ovate, subapiculate; rostellum quadrate, emarginate or slightly bilobed.

Lower Guinea. Angola: Huilla, *Antunes*, 17!

33. **S. Mechowii,** *Reichb. f. in Flora*, 1882, 531. Leaves 4–8, decreasing upwards into the bracts. Raceme cylindrical, dense-flowered. Bracts lanceolate, acuminate, longer than the flowers, reflexed during flowering. Lip calceolate, arched in the middle, without spurs.

Lower Guinea. Angola: Malanje, *Mechow*, 234B.

Only known to me from the description, in which it is said to be allied to *S. paludosum*, Reichb. f., but distinct in the absence of spurs, in which respect it resembles the South African *S. muticum*, Lindl.

44. DISA, Berg.; Benth. et Hook. f. Gen. Pl. iii. 630 (by N. E. Brown).

Sepals free, the odd one dorsal in the Tropical species, concave, hood-shaped, or helmet-shaped, with or rarely without one spur or sac. Petals usually much smaller than the sepals, generally more or less adnate to the column at the base, often included within the dorsal sepal, but quite free from it, very variable in shape. Lip anticous, sessile or clawed, entire, lobed, or fringed, but not crested. Column short. Anther erect, horizontal, or reflexed, 2-celled, the cells distinct and parallel; pollinia solitary in each cell, granular, attached by short or long caudicles to one gland, or to two distinct glands, seated at the apex or in the arms of the rostellum. Rostellum erect, subentire, bifid, or trifid at the apex, sometimes with side processes, often more or less adnate to the base of the petals, and sometimes forming a ridge upon them. Stigma seated in front of the rostellum, cushion-like. Capsule straight or twisted, erect, subcylindric,

clavate, or narrowly ellipsoid.—Terrestrial herbs, with simple sessile tubers. Leaves appearing with or before the flowers; the larger foliage-leaves often produced on a distinct growth from that which bears flowers; those of the flowering stem often reduced to sheaths. Flowers large or small, solitary, corymbose, racemose, or in dense or lax spikes, bracteate.

Species about 130, mostly South African, a few in Madagascar.

*Dorsal sepal spathulate, with a distinct channelled claw.
Anther erect.
Dorsal sepal 1½–2 in. long. Apical part of petals linear, 2–3 times as broad as the middle part . 1. *D. Carsoni.*
Dorsal sepal about 1 in. long. Apical part of petals linear, scarcely broader than the middle part . 2. *D. erubescens.*
Dorsal sepal 7–8 lin. long. Upper part of petals linear-spathulate . . . . . 3. *D. zombica.*

**Dorsal sepal not spathulate and without a claw, but sometimes cuneately narrowed to the base.
Anther erect. Dorsal sepal concave or boat-shaped; spur 1½–4½ lin. long, pendulous from its base.
Lip linear with a tooth on each side at its base . 4. *D. scutellifera.*
Lip linear without teeth at its base.
Petals 2–lobed.
Spike 5–8 in. long, ¾–1 in. thick.
Posterior lobe of petals linear, sigmoid, obtuse . . . . . 5. *D. Schimperi.*
Posterior lobe of petals linear-lanceolate, acute . . . . . 6. *D. ochrostachya.*
Spike 1–5 in. long, ¾–1½ in. thick, very dense. Posterior lobe of petals sub-spathulate or obovate . . . 7. *D. Welwitschii.*
Petals entire, lanceolate, acute . . . 8. *D. Deckenii.*
Anther horizontal. Dorsal sepal hood-shaped; spur 8–9 lin. long, pendulous from its base . . 9. *D. Stairsii.*
Anther horizontal. Dorsal sepal helmet or extinguisher-shaped; spur usually with a broad conical base, ascending, horizontal, or recurved (subpendulous in *D. versicolor*).
Lip entire.
Spur slender, several times longer than its apical diameter.
Spur straight.
Flowers under ¾ in. in diam.
Spur 2½–3 lin. long. Petals oblong, obtuse . . . . . 10. *D. saxicola.*
Spur 1 in. long. Petals obovate or spathulate, obtuse . . . 11. *D. Emini.*
Flowers about 1 in. in diam. Spur 1–1¼ in. long, petals falcate, acute . . 12. *D. robusta.*
Spur curved or subpendulous.
Flowers large, more than ¾ in. in diam.
Petals linear, falcate, obtuse . . 13. *D. Walleri.*
Flowers small.
Petals obovate or spathulate, obtuse . 11. *D. Emini.*
Petals rhomboid-oblong, acute . . 14. *D. hircicornis.*

Petals obliquely ovate, semisagittate on the dorsal side . . . . 15. *D. versicolor*.
Spur stout, not more than three times as long as thick.
Dorsal sepal erect, its mouth more or less in a line with the axis of the ovary.
Spur 1–1¾ lin. thick or broad at the apex.
Bracts 2–3 lin. broad. Lateral sepals minutely apiculate . . . 16. *D. equestris*.
Bracts 1–1½ lin. broad. Lateral sepals with an apiculus 1 lin. long . . 17. *D. concinna*.
Spur ½–¾ lin. thick at the apex . . 18. *D. pulchella*.
Dorsal sepal reflexed, its mouth at a right angle to the axis of the ovary. Lip spathulate-oblong . . . . 19. *D. aperta*.
Lip deeply fringed . . . . . 20. *D. hamatopetala*.

1. **D. Carsoni,** *N. E. Brown*. Plant 16–18 in. (or more) high, glabrous. Stem clothed to the top with appressed, sheath-like, acuminate leaves, the lower veined and mottled with red. Spike about 6 in. long, 3½–4 in. diameter, lax, 10–12-flowered. Flowers large. Bracts shorter than the flowers, 1–1¾ in. long, 5–7 lin. broad, ovate-lanceolate, acuminate. Dorsal sepal with an erect, incurved claw 10–13 lin. long, 1–1½ lin. broad, and an elliptic, obtuse, concave limb 8–9 lin. long, 6 lin. broad, with a clavate spur from the middle of its back, 7–8 lin. long, 1 lin. thick near the apex. Lateral sepals widely spreading and ascending, 1½ in. long, 6–6½ lin. broad, oblanceolate-oblong, obtuse, concave in the apical part, obliquely attached at the base. Petals 1½–1⅔ in. long; the basal part with large semi-elliptic auricles 6–7 lin. long, 3½–4½ lin. broad; the upper part linear, following the curve of the claw of the dorsal sepal to the base of the limb, and in this part ½ lin. broad, then dilated to 1¼–1½ lin. broad, and abruptly curved outwards and then upwards, like a pair of horns, the part above the curve 6–7 lin. long. Lip pendulous, 12–14 lin. long, ¼–1 lin. broad, linear, acute. Anther erect, 4 lin. long, oblong. Rostellum short, emarginate, not folded between the anther-cells.

Mozamb. Dist. British Central Africa: Fwambo, S. of Lake Tanganyika, *Carson*, 22!

This is the finest of all the Tropical African species of *Disa*, and evidently a very handsome plant. The stem-leaves appear to be glaucous and somewhat tinted with red. The bracts appear to be of a reddish colour, and the inside of the limb of the dorsal sepal and apical part of the petals are distinctly spotted with purple, whilst the large lateral sepals look as if they may have been of an orange tint.

2. **D. erubescens,** *Rendle in Journ. of Bot.* 1895, 297. Plant 15–22 in. high, glabrous. Stem clothed with coriaceous, lanceolate, acuminate, appressed sheath-like leaves 1½–3 in. long, the basal sheaths spotted. Leaves of barren stem a foot long, 4–6 lin. broad, linear. Spike 3–5 in. long, lax. Flowers large, deep red. Bracts shorter than the flowers, 1–1¼ in. long, 4–6 lin. broad, elliptic-ovate, acuminate. Dorsal sepal with an erect channelled claw 5–6 lin. long, and a boat-

shaped limb ½ in. long, 3–4 lin. broad, arching forward, with a slender, clavate spur 5 lin. long, ascending or horizontally directed from its middle (*i.e.*, 8–9 lin. above the base of the sepal). Lateral sepals 8–9 lin. long, 3 lin. broad, spreading and more or less ascending, oblong, subacute and slightly hooded at the apex, obliquely attached at the base. Petals 10–11 lin. long, broadly auricled at the base, linear above; the auricle 5 lin. long, 2½ lin. broad, semicordate, tapering upwards; the linear part 5–6 lin. long, ½–⅔ lin. broad, channelled down the face, with a double curve, first downwards or outwards, then upwards, at the middle, obtuse. Lip 6 lin. long, ⅕–⅓ lin. broad, linear. Anther erect, 2–3 lin. long, oblong. Rostellum short, truncate, folded between the anther-cells.

Nile Land. British East Africa: Ruwenzori, 6000–7000 ft., *Scott-Elliot*, 7809!

Mozamb. Dist. British Central Africa: Fwambo, S. of Lake Tanganyika, 5250 ft., *Nutt!* Nyasaland; between Kondowe and Karonga, 2000–6000 ft., *Whyte*, 348! Plateau of Mount Zomba, 5000–6000 ft., *Whyte!*

The Fwambo specimen is more slender than the others, with lanceolate acuminate bracts as long as, or longer than, the flowers, and has dried a different colour, but in floral structure is indistinguishable.

3. **D. zombica,** *N. E. Brown.* Plant 1½–2 ft. high, glabrous. Leaves of barren shoot 5–7 in. long, 6–8 lin. broad. Leaves of stem 1½–2 in. long, 8–9 lin. broad, ovate or lanceolate, acute or acuminate, erect and somewhat appressed. Spike 6–7 in. long, 1½ in. thick, moderately dense. Flowers of moderate size. Bracts longer than the flowers, 1½–2 in. long, 4–5 lin. broad, lanceolate, acuminate. Dorsal sepal erect, 7–8 lin. long, with a channelled claw about 4 lin. long, 1⅓ lin. broad, and a hooded limb 3–4 lin. long, 2½–3 lin. broad, obtusely rounded at the apex, cuneate into the claw at the base, with a clavate, pendulous spur 2½ lin. long, ¾ lin. thick, at the junction of the limb and claw. Lateral sepals spreading and ascending, 7–7½ lin. long, 3–3½ lin. broad, oblong, obtuse and concave at the apex, obliquely attached at the base. Petals 7–8 lin. long, entire spathulate-lanceolate, obtuse, with semicordate auricles at the base, 1½ lin. broad, tapering above, the spathulate part 1½ lin. broad. Lip 6½–7½ lin. long, ⅔ lin. broad, linear, obtuse. Anther erect, 2¾ lin. long, oblong. Rostellum short, dorsally keeled between the anther-cells; keel produced into a minute tooth.

Mozamb. Dist. British Central Africa: Nyasaland; Top of Zomba Mountain, *Buchanan* 305!

4. **D. scutellifera,** *A. Rich. in Ann. Sc. Nat. sér.*, 2 xiv. 272, *t.* 18, *f.* 1. Plant 1½–2 ft. high. Stem leafy to the top. Leaves longer than the internodes, erect, their non-sheathing portion 3–3½ in. long, 8–12 lin. broad, decreasing upwards, lanceolate-oblong or ovate-oblong, acute. Bracts 1–1¼ in. long, 5–6 lin. broad, lanceolate or oblong-lanceolate, acuminate. Dorsal sepal 6–7 lin. long, 4 lin. broad, erect, rhomboid, subacute, broadly boat-shaped; spur slender, 4 lin. long, ½ lin. thick,

cylindric, pendulous. Lateral sepals spreading and ascending, 6 lin. long, $2\frac{1}{2}$ lin. broad, oblong, obtuse or subacute. Petals $4\frac{1}{2}$–5 lin. long, 2 lin. broad, unequally 2-lobed to the middle; the posterior lobe $2\frac{1}{2}$–3 lin. long, $\frac{1}{2}$–$\frac{3}{4}$ lin. broad, falcate-linear, obtuse or subacute; the anterior lobe much shorter than the posterior, broadly rounded, ear-shaped. Lip 5–6 lin. long, linear and less than $\frac{1}{3}$ lin. broad, except at the base, where it is dilated to 1 lin. in breadth for about 1 lin. of its length, the dilated part ending in a tooth on each side. Anther erect, oblong, $2\frac{1}{2}$–3 lin. long. Rostellum short, with a fold between the anthers.—A. Rich, Fl. Abyss. ii. 302, t. 94; Walp. Ann. iii. 590.

Nile Land. Abyssinia: Mt. Sholoda, near Adowa, *Quartin-Dillon!* and without precise locality, *Parkyns!*

5. **D. Schimperi,** *N. E. Brown.* Plant 2–$2\frac{1}{2}$ ft. high, glabrous. Stem leafy to the top. Leaves of barren shoot 1 ft. long, 7–14 lin. broad, strap-shaped, acute. Leaves of flowering stem longer than the internodes, with a tubular sheath and an ascending or spreading blade $1\frac{1}{2}$–4 in. long, 7–12 lin. broad, lanceolate or ovate-lanceolate, acute or obtuse. Spike 6–8 in. long, about an inch thick, not very dense. Flowers carmine-red. Bracts equalling or longer than the flowers, $\frac{3}{4}$–1 in. long, $4\frac{1}{2}$–5 lin. broad, ovate-lanceolate, acute. Dorsal sepal $3\frac{1}{2}$–4 lin. long, 2–$2\frac{1}{2}$ lin. broad, erect, elliptic, obtuse, broadly boat-shaped; spur 2–$2\frac{3}{4}$ lin. long, $\frac{1}{2}$ lin. thick, straight, subcylindrical, obtuse, pendulous. Lateral sepals spreading and ascending, 4 lin. long, 2–$2\frac{1}{2}$ lin. broad, oblong, obtuse. Petals 3–4 lin. long, $1\frac{3}{4}$–2 lin. broad, unequally 2-lobed; the posterior lobe about $1\frac{1}{2}$ lin. long, $\frac{1}{3}$ lin. broad, sigmoid, linear, obtuse; the anterior lobe much shorter than the posterior, suborbicular. Lip 3 lin. long, $\frac{1}{4}$–$\frac{1}{3}$ lin. broad, linear, subobtuse. Anther erect, $1\frac{3}{4}$ lin. long, oblong. Rostellum short, with a fold between the anther-cells.

Nile Land. Abyssinia: Begemeder; at Sanka Berr on the River Reb, 6500 ft. *Schimper!* 1309!

Closely allied to *D. scutellifera,* A. Rich., but is distinguished by its smaller flowers, and by its lip, which is not toothed on each side at the base, as in that species.

6. **D. ochrostachya,** *Reichb. f. in Flora,* 1865, 181. Plant 1–2 ft. high, glabrous. Leaves of barren growth only seen in a very young state, $1\frac{1}{2}$–3 in. long, 5 lin. broad, linear-lanceolate, acute. Flowering stem with numerous, coriaceous, sheath-like, acuminate leaves, closely embracing the stem. Spike 5–8 in. long, $\frac{3}{4}$–1 in. thick, not very dense. Bracts equalling, longer or shorter than the flowers, 6–9 lin. long, 2–$2\frac{1}{2}$ lin. broad, ovate-lanceolate, or lanceolate, acuminate, reddish. Flowers small, yellowish-white. Dorsal sepal erect, $3\frac{1}{2}$ lin. long, $1\frac{1}{2}$–2 lin. broad, rhomboid, boat-shaped, obtuse, cuneately narrowed from the middle to the base; spur $4\frac{1}{2}$ lin. long, inflated, $\frac{3}{4}$–1 lin. thick, obtuse, straight, pendulous, and usually applied to the ovary. Lateral sepals about 3 lin. long, $1\frac{1}{2}$–$1\frac{2}{3}$ lin. broad, oblong, obtuse, widely spreading and slightly ascending. Petals $2\frac{3}{4}$–3 lin. long, $1\frac{1}{2}$ lin. broad, cuneately

narrowed from the middle to the base, unequally 2-lobed to the middle; posterior lobe linear-lanceolate, acute or obtuse; anterior lobe much shorter than, and twice as broad as, the posterior, oblong or subquadrate, very obtuse or obliquely subtruncate, minutely crenulate. Lip about 3 lin. long, linear, acute. Anther erect, $1\frac{1}{2}$ lin. long, oblong. Rostellum transversely oblong or subquadrate, broadly rounded in front, with a minute tubercle on its face.—*D. aurantiaca*, Reichb. f. in Flora, 1867, 98.

Lower Guinea. Angola: Huilla; Morro de Lopollo, *Welwitsch*, 712! 713!

7. **D. Welwitschii,** *Reichb. f. in Flora*, 1865, 181. Plant 1–2 ft. high, glabrous. Leaves of barren shoot 3–4 in. long, 5–6 lin. broad, or larger, strap-shaped, acute, glaucescent. Leaves of flowering stem subcoriaceous, sheath-like, as long as, or longer than the internodes, erect or appressed, lanceolate, acuminate. Spike 2–$5\frac{1}{2}$ in. long, $\frac{3}{4}$–$1\frac{1}{2}$ in. thick, very densely many-flowered. Flowers rather small, purple. Bracts shorter than, equalling, or longer than the flowers, 5–14 lin. long, $1\frac{1}{2}$–3 lin. broad, lanceolate, acuminate, yellowish. Dorsal sepal $2\frac{1}{4}$–$4\frac{1}{2}$ lin. long, $1\frac{1}{2}$–$2\frac{3}{4}$ lin. broad, erect, rhomboid-oblong, subobtuse, cuneately narrowed from the middle to the base, concave; spur moderately slender, pendulous, $1\frac{1}{2}$–$4\frac{1}{2}$ lin. long, straight. Lateral sepals spreading and slightly ascending, $2\frac{1}{2}$–$4\frac{1}{2}$ lin. long, $1\frac{1}{2}$–3 lin. broad, elliptic or elliptic-oblong, obtuse, concave. Petals $1\frac{1}{3}$–4 lin. long, 1–2 lin. broad, unequally 2-lobed to the middle; posterior lobe subspathulate or obovate, obtuse or subacute, concave, orange; anterior lobe rather more than half as long as the posterior, broadly ear-shaped. Lip 2–$4\frac{1}{2}$ lin. long, linear, acute. Anther erect, $1\frac{1}{2}$–$2\frac{1}{4}$ lin. long, oblong. Rostellum short, truncate or emarginate, with a keel or tubercle between the anther-cells.

Lower Guinea. Angola: Huilla, Morro de Lopollo, 5000–5300 ft., *Welwitsch*, 715!

Mozamb. Dist. British Central Africa: Fwambo, S. of Lake Tanganyika, 5000 ft., *Carson*, 7! 10! *Nutt!* Nyasaland; between Kondowe and Karonga, 2000–6000 ft., *Whtye*, 343! Shire Highlands, near Blantyre, *Last! Buchanan*, 313! and without precise locality, *Buchanan*, 288! 674!

This species varies very much in its robustness and in the size of the flowers, but I can find no structural differences among the specimens examined. I have only seen the leaves of the barren shoots on the Angolan specimens. The colour of the flowers, &c., is taken from the notes made by Dr. Welwitsch.

8. **D. Deckenii,** *Reichb. f. Otia Bot. Hamb.* ii. 105. Plant 7–13 in. high, glabrous. Lowest leaves 6–8 in. long, 4–8 lin. broad, strap-shaped, acute, ascending; the rest gradually smaller, more or less spreading, acute or acuminate. Spike 1–2 in. long, densely many-flowered. Flowers small "crimson" or "vivid red-mauve" (*Johnston*). Bracts equalling or shorter than the flowers, 4–8 lin. long, 2–3 lin. broad, lanceolate, acuminate. Dorsal sepal $2\frac{1}{2}$ lin. long, 1 lin. broad, erect, boat-shaped, hooded at the obtuse apex; spur slender, $2\frac{1}{2}$ lin. long, straight or slightly curved, deflexed or pendulous, cylindrical or slightly thickened at the apex. Lateral

sepals widely spreading and a little deflexed, 2–2¼ lin. long, 1–1¼ lin. broad, oblong; apex oblique, obtuse. Petals 1½–1¾ lin. long, ½ lin. broad, entire, lanceolate, acute or acuminate. Lip 1¾ lin. long, ¼–⅓ lin. broad, linear-lanceolate, acute. Anther erect. Rostellum short, folded between the anther-cells.—*D. kilimanjarica*, Rendle in Journ. Linn. Soc. xxx. 399. *D. polygonoides*, Kränzl. in Engl. Pfl. Ost-Afr. C. 153, not of Lindl.

Mozamb. Dist. German East Africa: Kilimanjaro, 6000–10,000 ft., *Kersten, Johnston*, 5! 161! *Taylor!* Marengu, 8000 ft., *Volkens*, 800!

Allied to *D. polygonoides*, Lindl., but it may at once be distinguished from that species by its longer spur, and lanceolate, acute petals; the venation of the sepals and petals is also different.

9. **D. Stairsii,** *Kränzl. in Gard. Chron.* 1892, xii. 728. Plant about 2 ft. high, glabrous. Lower leaves ascending, 5–7 in. long, 7–14 lin. broad, strap-shaped or lanceolate, acuminate, upper gradually smaller and becoming reduced to acuminate sheaths. Spike 3–4 in. long, 1¼–1½ in. diam., rather lax. Bracts as long as or longer than flowers, ¾–1¾ in. long, 3½–5 lin. broad, lanceolate, acuminate. Dorsal sepal erect, 3½–4 lin. long, 2½ lin. broad, subhemispherical, hooded at the obtuse apex; spur slender, 8–9 lin. long, ⅔ lin. thick, pendulous, curved. Lateral sepals spreading and deflexed, 4 lin. long, 2–2¼ lin. broad, oblong, obtuse with a short dorsal apiculus at the apex. Petals free or nearly so, 2½ lin. long, ¾ lin. broad, entire, falcate-oblong, obtuse or subacute. Lip 3½–4 lin. long, 1⅓ lin. broad near the apex, cuneate-oblong, obtuse. Anther horizontal, ¾–1 lin. long. Rostellum short, truncate, with a very slight fold between the anther-cells.—*D. gregoriana*, Rendle in Journ. Linn. Soc. 1895, xxx. 398. *D. Wissmannii*, Kränzl. in Engl. Pfl. Ost-Afr. C. 154. *D. Wissmanni*, Kränzl. in Engl. Jahrb. xxii. 21.

Nile Land. British East Africa: Mount Kenia, 10,400 ft., *Gregory!* Toru; Yeria, 10,000 ft., *Scott-Elliot*, 7850! 7860! Ruwenzori; Butagu Valley, 10,000–12,000 ft., *Scott-Elliot*, 8058! *Stairs*, 51.

Mozamb. Dist. German East Africa: Kilimanjaro; Kifinika Volcano, *Volkens*, 1893! 8000–10,000 ft., *Volkens*, 1171! 1948.

10. **D. saxicola,** *Schlechter in Engl. Jahrb.* xx. *Beibl.* 50, 41. Plant ½–1 ft. high, glabrous. Stem flexuose, with 4–6 leaves. Leaves spreading, 1½–6 in. long, 3–8 lin. broad, linear-lanceolate or narrowly strap-shaped, acuminate, strongly 3–5-nerved. Spike lax, elongating, about 2–4 in. long, 8–9 lin. diam. Bracts 4–5 lin. long, 1½–2 lin. broad, ovate-lanceolate, acute. Flowers small. Dorsal sepal erect, 2¼–2½ lin. long, about 1¼ lin. broad, hooded at the apex, dorsally tapering into a straight, slender spur, horizontal or more or less directed downwards, 3 lin. long, conical at the base. Lateral sepals apparently directed forwards, 2–2½ lin. long, about 1 lin. broad, oblong, obtuse, concave, hooded at the apex with a dorsal apiculus. Petals entire, 1½–1¾ lin. long, ⅔–¾ lin. broad, oblong, obtuse; apex incurved; posterior margin nearly straight; anterior margin broad and shallowly emarginate. Lip

1½ lin. long, ⅓–¾ lin. broad, linear-spathulate or cuneate-oblong, obtuse or subacute; margins reflexed. Anther horizontal, ⅔ lin. long. Rostellum quadrate, minutely 3-toothed at the subtruncate apex.

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan*, 1070!

Also in the Transvaal.

The petals are obtuse in all the specimens I have examined, not acute as described by *Schlechter*.

11. **D. Emini,** *Kränzl. in Engl. Jahrb.* xix. 248. Plant 20 in. or more high, glabrous. Stem slender. Radical leaves 9–10 in. long, 4–5 lin. broad, linear-lanceolate, acute or acuminate; stem leaves sheath-like, acute. Spike about 5 in. long. Bracts about equalling the ovary, lanceolate, acuminate. Flowers about as large as those of *D. polygonoides*. Dorsal sepal extinguisher-shaped, oblong, obtuse at the mouth, tapering behind into a filiform spur an inch long, straight or curved, ascending, very slightly inflated towards the apex. Petals obovate or spathulate, very obtuse. Lip extended, similar to the petals, but longer.

Mozamb. Dist. German East Africa: Karagwe: Bukoba, *Stuhlmann*, 4089.

I have not seen this plant, which is said to be allied to *D. Walleri*, Reichb. f., and *D. hircicornis*, Reichb. f.

12. **D. robusta,** *N. E. Brown*. Plant 2–2½ ft. high, with a robust stem 4–5 lin. thick, clothed with short sheath-like leaves, with ovate, acute or acuminate tips, about as long as the internodes, and closely embracing the stem. Spike moderately dense, 4–6 in. long, 2–3 in. diam. Flowers large, light blue. Bracts ¾–1¼ in. long, 4½–6 lin. broad, lanceolate, acuminate or acute. Dorsal sepal 4½–5 lin. in diam. at the mouth, extinguisher-shaped, gradually tapering from the mouth to a long, very ascending, acute, straight spur, rather slender in the apical part, and measuring from mouth to tip 1¼–1¾ in. Lateral sepals deflexed, 6–7 lin. long, 3½–4 lin. broad, oblong, obtuse, concave. Petals 4½–5 lin. long, 1½–2 lin. broad in upper part, entire, falcate, lanceolate, or linear-oblong, acute, auriculate at base in front. Lip 3½–4 lin. long, gradually tapering from the 1 lin. broad base to the acute apex. Anther horizontal, 1¼ lin. long.

Mozamb. Dist. British Central Africa: Nyasaland; between Kondowe and Karonga, 2000–6000 ft., *Whyte*, 347! Shire Highlands; Wilandi, near Blantyre, 4000 ft., *Buchanan*, 23! Mt. Zomba, 4000–6000 ft., *Whyte!* Mt. Malosa, 4000–6000 ft., *Whyte!*

13. **D. Walleri,** *Reichb. f. Otia Bot. Hamb.* ii. 105. Plant 2 ft. or more high, glabrous, only upper part of the stem seen. Leaves of barren growth 8–10 in. long, 1–1¾ in. broad, narrowly oblong or strap-shaped, acute. Upper stem-leaves 2–3½ in. long, lanceolate, acuminate, erect, clasping at base. Spike 5–10 in. long, 1¼–1¾ in. thick, not very dense. Flowers of moderate size. Bracts longer than flowers, 1–2 in. long, 3–5 lin. broad, lanceolate, acuminate. Dorsal sepal erect, 6–8 lin. long, 4–4½ lin. broad at the mouth, helmet-shaped,

abruptly contracted a little below the middle into a slender spur about 7 lin. long, $\frac{1}{2}$–$\frac{3}{4}$ lin. thick, arching-recurved or abruptly recurved a little above its conical base, and slightly inflated near the apex. Lateral sepals 5–7 lin. long, 2–2$\frac{1}{2}$ lin. broad, obliquely oblong, subobtuse. Petals 5–6 lin. long, $\frac{3}{4}$–1 lin. broad, entire, linear, slightly falcate, obtuse. Lip 4–5 lin. long, $\frac{1}{2}$ lin. broad, linear, obtuse. Anther horizontal, 2 lin. long, oblong. Rostellum slightly elevated above the level of the anther, bifid.—*D. zombaensis*, Rendle in Trans. Linn. Soc. ser. 2, iv. 47, t. 7, f. 1–3.

Mozamb. Dist. British Central Africa: Nyasaland; Manganja Hills, *Waller!* Zomba, *Whyte*, 3! and without precise locality, *Buchanan*, 306! 717!

D. zombaensis, Rendle, is identical with *D. Walleri*, Reichb. f., in every particular, and the flowers are by no means twice the size of the latter, as stated by Rendle.

14. **D. hircicornis,** *Reichb. f. Otia Bot. Hamb.* ii. 105. Plant about 2 ft. high, glabrous. Flowering stem without radical leaves; lowest 2–3 leaves reduced to sheaths; next 3–4 leaves strap-shaped, acute, erect, coriaceous, lowest 5–6 in. long, 7–9 lin. broad; others gradually passing into the bracts at the top of the stem. Spike 4–5 in. long, about $\frac{3}{4}$ in. thick, moderately dense. Bracts about equalling the flowers, 6–8 lin. long, 2–2$\frac{1}{2}$ lin. broad, ovate-lanceolate, acuminate, with reflexed tips. Flowers small. Dorsal sepal 3–3$\frac{1}{2}$ lin. long, 1$\frac{1}{2}$ lin. broad, helmet-shaped, acute, dorsally produced into a broadly conical-based spur about 5 lin. long, $\frac{1}{2}$ lin. thick, horizontally spreading or slightly ascending in the basal half, apical half abruptly curved downwards. Lateral sepals spreading and deflexed, 3 lin. long, 1$\frac{1}{2}$ lin. broad, oblong, obtuse, apiculate. Petals 2–2$\frac{1}{2}$ lin. long, $\frac{3}{4}$ lin. broad, entire, obliquely rhomboid-oblong in upper part, acute, narrowed towards base. Lip 2 lin. long, linear or linear-lanceolate, acute. Anther horizontal, with short subglobose cells, scarcely 1 lin. long. Rostellum deeply bifid.

Mozamb. Dist. British Central Africa: Nyasaland; near Mt. Sochi, 3000 ft., *Kirk*, Orchideæ, 2!

15. **D. versicolor,** *Reichb. f. in Flora*, 1865, 181. Plant 1–2 ft. high. Leaves of barren shoot erect, 4–12 in. long, $\frac{1}{2}$–1 in. broad, linear-lanceolate or strap-shaped, acute or acuminate, channelled or folded lengthwise. Lowest leaves of flowering stem 1$\frac{1}{2}$–4 in. long, $\frac{1}{2}$–1 in. broad, oblong-lanceolate, acute, the rest decreasing in size upwards; base of the stem and sheaths spotted with purple, upper leaves and stem more or less tinged with purple. Spike 4–10 in. long, about $\frac{3}{4}$ in. thick, dense. Bracts as long as, or longer than, flowers, 6–9 lin. long, 2–3$\frac{1}{2}$ lin. broad, ovate-lanceolate, acuminate, usually bent or reflexed below the apex, yellowish-green with purple tips. Flowers small. Dorsal sepal erect, whitish mottled with rosy, 2$\frac{1}{2}$ lin. long, 1$\frac{1}{2}$ lin. broad at the mouth, helmet-shaped, shortly conical behind; spur 3 lin. long, $\frac{1}{2}$ lin. thick, pendulous, abruptly bent at a right angle to its conical base, cylindrical or slightly thicker near the apex, dark purple. Lateral sepals deflexed, spreading, 2$\frac{1}{2}$ lin. long, 1$\frac{1}{3}$ lin. broad,

oblong, obliquely subacute, with a dorsal apiculus, whitish mottled with rosy, lined with blackish-purple at the base. Petals 2–2¼ lin. long, 1⅓–1½ lin. broad, entire, obliquely ovate in general outline, acute, anterior side broadly semiovate, posterior side narrower, semisagittate at about the middle; this narrow part is strongly infolded, colour orange-yellow running into greenish, margined with purple, base dark purplish (*Welwitsch*). Lip 2 lin. long, ½ lin. broad near the apex, oblanceolate or subspathulate, obtuse, slightly keeled down the face from the margins being more or less replicate. Anther horizontal. Rostellum rather large, raised above the stigma, shortly bifid.—*D. Macowani*, Reichb. f. Otia Bot. Hamb. ii. 106.

Lower Guinea. Angola: Huilla; Morro de Lopollo, above 5000 ft., *Welwitsch*, 714!

Also in South Africa.

According to *Welwitsch*, after the full development of the flower the petals emerge from the dorsal sepal, and the spike appears yellow in the lower half and gradually deeper rose-coloured towards the apex.

16. **D. equestris,** *Reichb. f. in Flora*, 1865, 181. Plant 9–18 in. high, glabrous. Leaves of barren shoot 6 in. long, linear-lanceolate. Flowering stem spotted with purple, bearing 4–8 erect leaves, lower 2–3 in. long, 5–6 lin. broad, upper gradually smaller, lanceolate, oblong-lanceolate, or ovate-oblong, acute or acuminate. Spike lax, elongating, 2–6 in. long, ¾–1¼ in. diameter. Bracts greenish-purple, 3–6 lin. long, 2–3 lin. broad, elliptic-ovate, obtuse or acute. Dorsal sepal 3–4 lin. long, 2–3 lin. broad, violet-purple, extinguisher-shaped, gradually tapering from the mouth into a slightly clavate, very obtuse, stout, horizontal or ascending spur, 1–1½ lin. thick, 5–7 lin. from mouth to tip. Lateral sepals deflexed, 2¾–4 lin. long, 1½–2 lin. broad, violet-purple, oblong, obtuse, with a minute dorsal apiculus. Petals white with a purple spot at the apex, 2–2½ lin. long, entire, subspathulate; basal half auricled in front, with a crest or keel down its inner face; apical half dilated, ¾ lin. broad, curved forward, subelliptic; posterior margin revolute; apex obtuse or slightly emarginate. Lip 2–2½ lin. long, 1⅓ lin. broad, elliptic or obovate, obtuse, velvety papillose, white at the base, red-purple at the apex. Anther horizontal, 1–1¼ lin. long. Rostellum with short ascending sides, and a tubercular fold between the anther-cells.

Lower Guinea. Angola: Huilla; Morro de Lopollo, 4000–5400 ft., *Welwitsch*, 717!

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, near Blantyre, *Last!*

17. **D. concinna,** *N. E. Brown.* Plant about 1 ft. high, glabrous. Leaves about 3–5 to a stem, 1½–3½ in. long, as long as or longer than internodes, 8–9 lin. broad, ovate-lanceolate, acuminate or acute erect, and more or less embracing the stem, gradually decreasing upwards. Spike 2–6 in. long, ¾ in. in diameter, elongating and becoming somewhat lax. Bracts shorter than the flowers, 3–6 lin. long,

1–1½ lin. broad, lanceolate, acuminate. Flowers rather small, pink. Dorsal sepal erect, 3½ lin. long, 1¾–2 lin. broad, helmet-shaped, dorsally produced into a stout, compressed spur, 1½–2 lin. long, 1⅓–1¾ lin. broad, oblong, obtuse, ascending when in position on the spike, the whole sepal measuring 3¾–4 lin. from the apex to the tip of the spur. Lateral sepals deflexed, divergent, 2–2½ lin. long, 1¼–1½ lin. broad, obliquely or subfalcately oblong, concave, subacute, with a subulate dorsal apiculus 1 lin. long just below the apex. Petals 2–2½ lin. long, rather more than ½ lin. broad in the lower part, and 1 lin. or more broad at the apex; lower half oblong, auricled at the base; apical half obliquely ovate, subobtuse, directed forwards. Lip 2½ lin. long, ¾ lin. broad, narrowly oblong, with reflexed or replicate sides, apex obtuse, bent downwards, cuneately narrowed into a short stalk at the base, obtusely keeled down the middle. Anther horizontal, 1 lin. long, suborbicular. Rostellum very short and broad, subtruncate, slightly folded between the anther-cells.

Mozamb. Dist. British Central Africa: Nyasaland; Mount Zomba, 4000–6000 ft., *Whyte!* Mount Malosa, 4000–6000 ft., *Whyte!*

Allied to *D. equestris*, Reichb. f., but readily distinguished by its narrower bracts, shorter spur, and long apiculus to the lateral sepals.

18. **D. pulchella,** *Hochst. ex A. Rich. Fl. Abyss.* ii. 301, *t.* 93. Plant 4–16 in. high, glabrous. Leaves 3–8, scattered, erect, the lower 3–3½ in. long, 6–13 lin. broad, varying from lanceolate to elliptic-oblong, acute, the others gradually decreasing upwards. Spike 1½–4½ in. long, 7–9 lin. thick, dense. Bracts shorter than flowers or about equal, 5–8 lin. long, ovate-lanceolate, acuminate. Flowers rather small. Dorsal sepal 2½–3 lin. long, 2–4 lin. broad at the mouth, suborbicular or transverse oblong, helmet-shaped; spur erect or ascending, moderately stout, 2–3 lin. long, ½–¾ lin. broad, slightly compressed, straight, obtuse. Lateral sepals deflexed, divergent, 3–3½ lin. long, 1½–2 lin. broad, oblong or cuneate-oblong, obtuse, with a compressed dorsal apiculus ½–¾ lin. long just below the apex, margins often reflexed or revolute. Petals 1½–2½ lin. long, 1¼–1¾ lin. broad at the apex, somewhat oblong, auricled at the base, dilated at the subtruncate apex; posterior margin concave; anterior margin more or less broadly emarginate. Lip 2½–3 lin. long, linear-oblanceolate or spathulate-obovate, obtuse, keeled down the face from the margins being replicate. Anther horizontal. Rostellum bilobed, lobes large and triangular, adnate to the base of the petals.—Walp. Ann. iii. 590; Ridley in Journ. of Bot. 1886, 296.

Nile Land. Abyssinia: Tigre; Sholoda Mountain, near Adowa, *Quartin-Dillon* (ex *Richard*); Semen; near Enjedcap, *Schimper*, 1192! Wodjerat Dist., *Quartin-Dillon & Petit*, 100! Begemeder; Debra Tabor, 8500 ft., *Schimper*, 1316! and without precise locality, *Schimper*, 600!

The flowers vary in colour, in the type (*Schimper*, 1192) they are whitish or pallid, spotted with dark purple in all parts, whilst *Schimper's* 1316 has the lateral sepals and apical part of the lip entirely of a dark purple colour, but there is no structural difference between them.

19. **D. aperta,** *N. E. Brown.* Plant 15–18 in. high, glabrous. Stem with 4–6 oblong, acute, coriaceous leaves about as long as the internodes, erect and more or less embracing the stem, $1\frac{1}{2}$–$2\frac{1}{2}$ in. long, including the sheathing portion, $2\frac{1}{2}$–6 lin. broad. Spikes 7–9 in. long, $1\frac{1}{2}$ in. diameter, lax, elongating. Bracts 4–7 lin. long, 2–3 lin. broad, ovate or ovate-lanceolate, acuminate. Dorsal sepal reflexed at a right angle to the ovary, 4 lin. long, 2 lin. broad, galeate, rather abruptly contracted at the middle of the back into a straight, compressed, very obtuse spur $1\frac{1}{2}$–2 lin. long, $\frac{3}{4}$–1 lin. broad. Lateral sepals directed forwards at nearly a right angle to the ovary, $4\frac{1}{2}$–5 lin. long, $2\frac{1}{4}$–3 lin. broad, obliquely elliptic-oblong, obtuse with a compressed dorsal mucro at the apex. Petals 3 lin. long; basal half $\frac{2}{3}$ lin. broad, narrow oblong; apical half 1–$1\frac{1}{4}$ lin. broad, ovately semisagittate, acute. Lip directed in a line with the ovary, 3–$3\frac{1}{2}$ lin. long with a linear claw $\frac{3}{4}$ lin. long, and an oblong, obtuse blade, 2–$2\frac{1}{2}$ lin. long, 1 lin. broad, cuneate at the base, longitudinally folded down the middle. Anther horizontal, $\frac{3}{4}$ lin. long. Rostellum short, acutely bifid, very slightly folded between the anther-cells.

Mozamb. Dist. British Central Africa: Fwambo, S. of Lake Tanganyika, *Carson*, 51!

20. **D. hamatopetala,** *Rendle in Trans. Linn. Soc. ser.* 2, iv. 47, *pl.* 7, *figs.* 4–6. Plant 6–18 in. high, glabrous. Leaves linear-filiform, often withered or burnt off at the time of flowering, leaving a tuft of their remains at the base of the stem. Flowering stem slender, with 6–12 membranous, distant, acuminate sheaths, lower about an inch long, upper smaller. Raceme laxly 1–7-flowered. Bracts shorter than the ovaries, 3–6 lin. long, $1\frac{1}{2}$–$3\frac{1}{2}$ lin. broad, ovate, acute, terminated by a fine awn-like point. Flowers rather large, blue. Dorsal sepal erect, 7–9 lin. long, 4–5 lin. broad, helmet-shaped, with a stout, ascending, obtuse spur, $2\frac{1}{2}$ lin. long, 1–$1\frac{1}{2}$ lin. thick. Lateral sepals spreading and deflexed, 6–9 lin. long, $2\frac{1}{2}$–4 lin. broad, oblong, obtuse, concave. Petals 4–5 lin. high, strongly curved forwards; base with a broad semicordate auricle, $1\frac{1}{2}$–2 lin. long, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. broad; middle part linear, $\frac{1}{2}$–$\frac{2}{3}$ lin. broad; apical part dilated to $1\frac{1}{2}$–2 lin. broad, somewhat hatchet-shaped, bifid or trifid, the two principal teeth being $\frac{3}{4}$–$1\frac{1}{2}$ lin. long, the third, when present, much shorter. Lip 6–9 lin. long, 3–4 lin. broad, oblong in outline; margins deeply cut into a fringe of simple linear-clavate or filiform-clavate processes. Anther horizontal, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. long, oblong. Rostellum trifid; middle lobe slightly folded between the anther-cells and emarginate at the apex.

Mozamb. Dist. German East Africa: Higher plateau, N. of Lake Nyasa, *Thomson!* British Central Africa: Nyasaland; between Lake Tanganyika and Lake Nyasa, *Johnston!* between Kondowe and Karonga, 2000–6000 ft., *Whyte*, 345! Mt. Malosa, 4000–6000 ft., *Whyte!* Zomba, 6000–7000 ft., *Kirk! Whyte!* Mlanji, 6000 ft., *Whyte*, 36! 136! and 199! Mlanji Plateau, *Johnston!* Litshengu Plateau, 6800 ft., *McClounie*, 10! and without precise locality, *Buchanan*, 1016!

There are also specimens at Kew, collected by *Thomson*, on the higher plateau N. of Lake Nyasa, which I cannot distinguish structurally from *D. hamatopetala*, but they have very much smaller flowers, the dorsal sepals being $3\frac{1}{2}$ lin. long, 2 lin.

broad; the lateral sepals $3\frac{1}{2}$ lin. long, $1\frac{3}{4}$ lin. broad; the petals $1\frac{3}{4}$ lin. high; and the lip 5 lin. long. They are probably starved specimens or seedlings flowering for the first time.

45. **BROWNLEEA**, Harv.; Benth. et Hook. f. Gen. Pl. iii. 631 (by N. E. Brown).

Lateral sepals free, dorsal adhering to the petals into a helmet- or extinguisher-shaped galea, produced behind into one spur. Petals erect, adhering to the inner sides of the mouth of the dorsal sepal, and adnate to the column at the base. Lip minute, entire. Column short. Anther horizontal, more or less incurved, with two parallel cells, produced in front into channels, which continue up the back of the rostellum; pollinia solitary in each cell, granular, each mass attached by a caudicle to a distinct gland. Rostellum erect, more or less distinctly 2-lobed, lobes notched at the apex, tuberculate on the sides at the base. Stigma seated at base of the rostellum, vertical or oblique, cushion-like. Capsule cylindric, erect.—Terrestrial herbs with simple sessile tubers. Stem rather slender, with 2–4 distant leaves. Flowers small or of moderate size, in lax or dense spikes, sometimes secund, rarely solitary.

Species about 10, chiefly South African, one in Madagascar.

This genus only differs from *Disa* in having the petals adherent to the dorsal sepal, forming a hood, as in the *Corycieæ*. This character was overlooked in the key to the subtribe, p. 14.

Lip linear	1. *B. alpina*.
Lip broadly oblong	2. *B. apetala*.

1. **B. alpina,** *N. E. Brown*. Plant 8–24 in. high, quite glabrous. Leaves two or three and a basal sheath, distant, erect, the lower one 3–9 in. long, 3–7 lin. broad, broadly linear, or linear-lanceolate, tapering to an acute point, the upper much smaller, sometimes bract-like. Spike $1\frac{1}{4}$–3 in. long, dense, with erect flowers. Bracts equalling or shorter than flowers, $\frac{1}{4}$–$\frac{1}{2}$ in. long, $\frac{3}{4}$–$1\frac{1}{2}$ lin. broad at base, lanceolate, attenuate to an acute point. Dorsal sepal $1\frac{1}{2}$ lin. long, $\frac{3}{4}$ lin. broad, boat-shaped, arching forwards, and forming a hood with petals; spur $1\frac{1}{4}$–$1\frac{1}{2}$ lin. long, cylindrical, obtuse, abruptly curved downwards at its middle. Lateral sepals $1\frac{1}{4}$ lin. long, $\frac{1}{2}$ lin. broad, subfalcate-oblong, subacute, margins incurved in the apical part. Petals about 1 lin. long and $\frac{3}{4}$ lin. broad, elliptic, obtuse, entire, erect, upper margin involute, and slightly adhering to dorsal sepal. Lip minute, $\frac{1}{4}$–$\frac{1}{3}$ lin. long, linear obtuse. Anther horizontal. Rostellum erect, short and broad, shortly bifid or emarginate, with a globose tubercle on each side at its base.—*Disa alpina*, Hook. f. in Journ. Linn. Soc. vii. 220. Engler, Hochgeb. Fl. Trop. Afr. 186. *D. Preussii*, Kränzl. in Engl. Jahrb. xvii. 64.

Upper Guinea. Cameroons, 6000–8000 ft., *Mann*, 2120! *Johnston*, 86! *Preuss*, 973!

2. **B. apetala,** *N. E. Brown*. Stem and leaves not described. Flowers very minute, flesh-coloured. Dorsal sepal galeate, ovate,

obtuse, spur cylindrical, curved nearly in a circle, a little thickened at apex. Lateral sepals irregularly quadrangular, exterior lower angle almost a right angle, obtuse. Petals none (?) Lip very broadly oblong, obtuse. Rostellum short, ligulate.—*Disa apetala*, Kränzl. in Engl. Pfl. Ost-Afr. C. 153; and in Engl. Jahrb. xxii. 21.

Mozamb. Dist. German East Africa: Kilimanjaro; Useri, 6000 ft., *Volkens*, 1969.

I have not seen this plant. The petals are stated to be entirely absent, with a doubtful suggestion that they may be connate with the lateral sepals, but I have little doubt that they more or less adhere to the dorsal sepal, and have been overlooked. I therefore place it under the genus *Brownleea*, which only differs from *Disa* by that character.

46. **DISPERIS**, Sw.; Benth. et Hook. f. Gen. Pl. iii. 633 (by R. A. Rolfe).

Dorsal sepal erect, galeate or calcarate; lateral spreading, oblique, free or more or less united, dorsally saccate or calcarate near the inner margin. Petals united to dorsal sepal, falcately curved, usually constricted in the middle, and obliquely acute or lobed at apex; base sometimes auriculate. Lip adnate to the face of the column, long clawed above it, variously curved within the galea; apex simple or dilated into an entire sharply reflexed limb, bearing on its face a tooth-like or bilobed appendage, either directed to the back of the spur or incurved towards its mouth; very rarely inappendiculate. Column erect, very stout; rostellum large, membranous, bilobed, produced in front into two rigid cartilaginous arms, holding at their extremities the glands of the pollinia. Clinandrium horizontal or ascending; anther-cells distinct, parallel, somewhat approximate; pollen granules secund in a double row on the margins of the flattened caudicles, which curl up in a spiral on removal. Stigma bilobed; lobes situated on either side of the adnate claw of the lip, approximate or somewhat distant. Capsule cylindrical or ovoid-oblong, ribbed.—Terrestrial herbs, usually small or slender, with ovoid tubers. Leaves one to few, alternate, or limited to a single opposite pair. Flowers in racemes or solitary. Bracts medium-sized or large and leaf-like.

A genus of about forty species, most numerous in extra-tropical South Africa, with four in the Mascarene Islands, and two in South India.

One of the most natural and sharply defined genera in the Order, with remarkably complex structure. Its most striking peculiarities are, the prominent side arms of the rostellum, over which the sacs of the lateral sepals exactly fit before the flowers expand, and the remarkable diversities in the lip, which is adnate to the face of the column, narrowly clawed above it, and then variously lobed or appendaged, this latter part being enclosed within the galea formed by the union of the petals inside the saccate or concave dorsal sepal. The appendage of the lip often exceeds the free limb in size, though not invariably so, and in *D. Anthoceros* it is altogether absent. The shape and direction of the two are also so variable that they are sometimes confused. The former, however, may easily be recognised by the fact that it arises from the face of the latter, being homologous with the crest of other genera. In some cases it is directed to the back of the spur, and in others to its mouth, and it is

frequently penicillate or papillose at the apex. These peculiarities are evidently connected with the fertilisation of the flower, the details of which are at present unknown.

Leaf solitary . . . . . 1. *D. crassicaulis.*
Leaves two or three, alternate.
Dorsal sepal distinctly saccate.
Limb of lip lanceolate or ovate.
Limb of lip with rounded auricles . . . 2. *D. galerita.*
Limb of lip without auricles.
Appendage of lip bilobed . . . . 3. *D. Meirax.*
Appendage of lip obtuse . . . . 4. *D. kilimanjarica.*
Limb of lip divergently 2-armed . . . . 5. *D. reichenbachiana.*
Dorsal sepal slightly gibbous . . . . . 6. *D. Johnstoni.*
Leaves two opposite.
Spur short, broad and curved . . . . . 7. *D. Kerstenii.*
Spur long, tapering, and straight.
Lip sharply reflexed; spur under $\frac{1}{2}$ in. long.
Limb of lip lanceolate, much larger than the tooth-like appendage . . . . 8. *D. Preussii.*
Limb of lip linear, much smaller than the bilobed appendage . . . . . 9. *D. nemorosa.*
Lip not reflexed; spur over $\frac{1}{2}$ in. long . . . 10. *D. Anthoceros.*

1. **D. crassicaulis,** *Reichb. f. in Linnæa*, xxii. 860. Stem stout, 2–3$\frac{1}{2}$ in. high, 1-leaved. Leaves alternate, sessile, broadly cordate orbicular, $\frac{1}{2}$–1 in. broad. Racemes 2- or 1-flowered. Bracts ovate or ovate-oblong, obtuse, 4–7 lin. long. Pedicels 3–4 lin. long. Dorsal sepal confluent with the petals into a broad hood, 3–4 in. long; sides broadly rounded; inflexed apex with a tooth-like apiculus; lateral sepals spreading, obliquely and broadly oblong, apiculate on one side above the middle, gibbous or subsaccate close to the apiculus, 4 lin. long. Petals confluent with the dorsal sepal. Lip with slender claw, 2 lin. long; upper third free; limb sharply reflexed, 1$\frac{1}{4}$ lin. long, narrow and recurved in front, dilated with reflexed sides and rounded auricles behind, puberulous; appendage triangular-oblong, $\frac{3}{4}$ lin. long, curved towards the mouth of the galea, puberulous. Column very broad, 1$\frac{3}{4}$ lin. long; arms of rostellum linear-oblong, curved, 1 lin. long. —Walp. Ann. iii. 593; Engl. Hochgeb. Fl. Trop. Afr. 186. *Pterygodium biflorum*, Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 303.

Nile Land. Abyssinia: Tigre; Mt. Sholoda, near Adowa, *Quartin-Dillon* (ex *Richard*); Semen; mountainous region between Enjedcap and Shoata, *Schimper*, 570!

2. **D. galerita,** *Reichb. f. Otia Bot. Hamb.* ii. 103. Stem 3–6 in. high, 3–4-leaved. Leaves alternate, sessile, ovate or ovate-oblong, obtuse or apiculate, 7–14 lin. long, 5–7 lin. broad, the lower one reduced to a sheath. Raceme 3-flowered. Bracts like the leaves, and only a little smaller. Pedicels 3 lin. long. Flowers rose-purple. Dorsal sepal galeate, 5 lin. long, prolonged behind into an oblong, obtuse sac, 1 lin. long; apex incurved, acute; lateral spreading, oblique, semi-ovate, subacute, 3$\frac{1}{2}$ lin. long, produced behind near the inner margin into an obtuse sac, 1 lin. long. Petals falcate-oblong, obliquely apicu-

late, 4 lin. long, united to the margins of the dorsal sepal. Lip with a slender claw $2\frac{1}{4}$ lin. long; adnate base very short; limb sharply reflexed, subulate-lanceolate, subobtuse, 1 lin. long, with a pair of rounded auricles at the base; appendage linear, $1\frac{3}{4}$ lin. long, directed backwards to the apex of the spur, and there slightly thickened. Column very broad, 2 lin. long; arms of rostellum $1\frac{1}{2}$ lin. long.

Nile Land. Abyssinia: Semen; near Andere, *Schimper*, 631! Begemeder; Debra Tabor, 8500 ft., *Schimper*, 1270!

3. **D. Meirax,** *Reichb. f. Otia Bot. Hamb.* ii. 103. Stem rather stout, 3 in. high, 3-leaved. Leaves alternate, sessile, ovate or ovate-oblong, subacute or apiculate, 9–10 lin. long, 3–$5\frac{1}{2}$ lin. broad, the lower one smaller and sheath-like. Racemes 2–3-flowered. Bracts oblong-lanceolate, acute, 6 lin. long. Pedicels 3 lin. long. Dorsal sepal galeate, $2\frac{1}{2}$ lin. long, lateral margins rounded; lateral spreading, obliquely semiovate, obtuse, united by their infolded inner margins, conduplicate-concave but not spurred, $1\frac{1}{4}$ lin. long. Petals very oblique, broadly and falcately semiovate, obtuse, with a rounded basal margin united to the dorsal sepal. Lip with narrow claw 1 lin. long; basal fourth adnate; limb sharply reflexed, ovate-oblong, obtuse, $\frac{1}{3}$ lin. long; appendage oblong, $\frac{1}{2}$ lin. long, slightly bidentate at the apex, which is directed towards the apex of the spur. Column very broad, $\frac{3}{4}$ lin. long; arms of rostellum broadly oblong, $\frac{1}{2}$ lin. long.

Nile Land. Abyssinia: Semen; Débra Eski, towards Woina, 8500 ft., *Schimper*, 632!

4. **D. kilimanjarica,** *Rendle in Journ. Linn. Soc.* xxx. 400, *t.* 32, *figs.* 8–10. Tuber ovoid, 5 lin. long. Stems 3 in. high, 2-leaved, with an acute sheath at the base. Leaves alternate, sessile, cordate, apiculate, 6–7 lin. long, $3\frac{1}{2}$–$4\frac{1}{2}$ lin. broad. Flower solitary. Bract leaf-like, 4 lin. long. Pedicel 3 lin. long. Dorsal sepal galeate, acute, 4 lin. long, obtusely saccate behind; lateral obliquely ovate, apiculate, 3 lin. long, calcarate near their inner margins. Petals $1\frac{1}{2}$ lin. long, united to the margin of the dorsal sepal, forming a broad hood. Lip 3 lin. long, narrow except the terminal ovate blade, which has an elongated spur at the base. Column short; arms of rostellum linear-oblong.

Mozamb. Dist. German East Africa: Kilimanjaro; higher slopes above Morang, to 10,000 ft., *Taylor!*

Closely resembles the South African *D. Macowani*, Bolus, but is glabrous, and the flower larger, with a bluntly spurred dorsal hood, and a shorter, stouter appendage to the lip. It increases by throwing out short, slender stolons, which are tuberiferous at the apex.

5. **D. reichenbachiana,** *Welw. ex Reichb. f. in Flora*, 1865, 180. Tuber ovoid-oblong, 10–12 lin. long. Stem 8–9 in. high, 2- or rarely 1-leaved, with two acuminate sheaths near the base. Leaves alternate, sessile, cordate-oblong, obtuse or subacute, 1–$1\frac{1}{4}$ in. long, 6–8 lin. broad, with a rose-coloured midrib. Raceme 2–3-flowered. Bracts leaf-like, 4–8 lin. long. Pedicels 4–5 lin. long. Dorsal sepal ligulate, acute, united with the triangular petals into a hood, $2\frac{1}{2}$–3 lin. long; lateral

sepals obliquely oblong, acute, 2 lin. long. Lip cuneate, divergently 2-armed; arms papillose; appendage elongate-oblong, fleshy, papillose. Column very stout; arms of rostellum linear-falcate, 1 lin. long.

Lower Guinea. Angola: Pungo Andongo, *Welwitsch*, 694!

The flower examined was in a young state, and so membranous that I could not make out the exact details, hence the characters are chiefly repeated from Reichenbach.

6. **D. Johnstoni,** *Reichb. f. ex Oliv. in Trans. Linn. Soc. ser.* 2, ii. 349 (*name only*). Stem slender, 4–6 in. high, 2-leaved. Leaves alternate, sessile, cordate-ovate or ovate-oblong, subobtuse or apiculate, 8–13 lin. long, 4–8 lin. broad, with an apiculate sheath at the base. Racemes short or subcorymbose, 2–5-flowered. Bracts ovate, acute or apiculate, $2\frac{1}{2}$–4 lin. long. Pedicels 4–6 lin. long. Dorsal sepal united with the petals into a concave obtuse hood, 3 lin. long, slightly gibbous behind; lateral sepals obliquely semiobovate, apiculate, united in the basal third. Lip with slender flattened claw, $1\frac{3}{4}$ lin. long; basal third adnate; free part bearing a pair of suberect, linear, obtuse appendages, over $\frac{1}{2}$ lin. long, below the middle of the free part; limb reflexed, ovate, membranous, $\frac{3}{4}$ lin. long, exserted from the galea, with a broad, flattened, obtuse erect tooth or crest near the base. Column 1 lin. long; arms of rostellum $\frac{1}{2}$ lin. long. Capsule oblong, 5–6 lin. long.

Mozamb. Dist. German East Africa: Kilimanjaro, 5000–6000 ft., *Johnston!*

7. **D. Kerstenii,** *Reichb. f. Otia Bot. Hamb.* ii. 102. Stems slender, 6–9 in. long, 2-leaved, with an acute sheath near the base. Leaves opposite, very shortly petioled, cordate-ovate, subacute or apiculate, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long, 10–12 lin. broad. Raceme short, 2–4-flowered. Bracts ovate or ovate-lanceolate, acuminate, 4–6 lin. long. Pedicels 5–6 lin. long. Flower violet. Dorsal sepal galeate, 4 lin. long, with inflexed apex; lateral spreading, free, obliquely obovate, inner margin produced into a spur 1 lin. long. Petals with a narrow claw united to the margin of the dorsal sepal; apex extended into free quadrate-dolabriform wings, 2 lin. broad, and nearly as long. Lip with a narrowly linear curved claw, $5\frac{1}{2}$ lin. long; basal sixth adnate; limb sharply reflexed, triangular-oblong, pilose, $\frac{1}{2}$ lin. long, with incurved subobtuse apex; appendage deeply bilobed, $2\frac{1}{4}$ lin. long, exserted over the lateral sepals; the arms slightly dilated above, with a curved subacuminate apex, and a reflexed, linear tooth, $1\frac{1}{2}$ lin. long, from the broad inner angle. Column very broad, 1 lin. long; rostellum bilobed; arms slender, 1 lin. long.

Mozamb. Dist. German East Africa: Kilimanjaro; Chagga District, 3000–4000 ft., *Kersten*, and at 7500 ft., *Johnston!*

8. **D. Preussii,** *Rolfe.* Stem rather slender, 5 in. high, 2-leaved. Leaves opposite, shortly petioled, cordate-ovate, subacute or apiculate, 1 in. long, 10 lin. broad; petioles $1\frac{1}{2}$ lin. long. Racemes 3- to 1-flowered. Bracts ovate, acuminate, 2–6 lin. long. Pedicels 3 lin. long. Dorsal sepal almost reduced to an oblong, obtuse spur,

4 lin. long; lateral sepals spreading, obliquely obovate, subapiculate, 4 lin. long, with a conical sac, ½ lin. long, near the inner margin. Petals much curved, united to the margins of the dorsal sepal, auriculate at the base, much constricted below the triangular, acute, inflexed apex. Lip with a slender claw, 3 lin. long; basal sixth adnate; limb sharply reflexed, lanceolate, subobtuse, 1½ lin. long, with somewhat inflexed sides, keeled behind; appendage situated above the base of the limb, tooth-like, ½ lin. long, dilated at the base, with penicillate margin, deflexed. Column very stout, 1 lin. long; arms of rostellum subspathulate-linear, ½ lin. long.

Upper Guinea. Cameroons: Buea, 3600–3900 ft., *Preuss*, 609!

9. **D. nemorosa,** *Rendle in Journ. Bot.* 1895, 297. Stem slender, 5–8 in. high, 2-leaved, with an acute sheath near the base. Leaves opposite, sessile, ovate, acute or acuminate, 1 in. long, 9–10 lin. broad. Raceme very short, 2-flowered. Bracts ovate or ovate-lanceolate, acuminate. Pedicels 6–8 lin. long. Dorsal sepal almost reduced to a slender spur, 5 lin. long; lateral spreading, free, obliquely obovate-elliptic, obtuse, 4 lin. long, with a conical sac ½ lin. long on the inner margin. Petals united to the margins of the dorsal sepal, auriculate at the base; the free apex broadly rounded. Lip with a slender, flattened claw, 4½ lin. long; adnate base very short; limb sharply reflexed, linear, 1 lin. long; appendage 4½ lin. long, directed to the apex of the spur, linear to near the apex, then cuneately dilated, and terminating in a pair of spreading, oblong, obtuse lobes, ½ lin. long. Column very stout, ½ lin. long; rostellum bilobed, with oblong, curved arms, ½ lin. long.

Nile Land. British East Africa: Ruwenzori; at Wimi, 7000–8000 ft., in deep forest, *Scott-Elliot*, 7944!

10. **D. Anthoceros,** *Reichb. f. Otia Bot. Hamb.* ii. 103. Tuber ovoid-oblong, 6–8 lin. long. Stem stout, 5–9 in. high, 2-leaved, with an obtuse sheath near the base. Leaves opposite, subsessile, cordate-ovate, subacute or apiculate, ½–1½ in. long, 5–12 lin. broad. Racemes 2- or 1-flowered. Bracts ovate, subacute or acuminate, 3–6 lin. long. Pedicels 5–8 lin. long. Flowers yellow-green. Dorsal sepal almost reduced to an elongate-conical spur, 6–8 lin. long; lateral spreading, obliquely obovate, apiculate, 4 lin. long, united to about the middle, with a conical sac ¾ lin. long on the inner margin. Petals falcate-oblong, united to the margins of the dorsal sepal; apex broadly rounded; base auriculate. Lip elongate-linear to the apex, 4½ lin. long; adnate base very short; apex slightly toothed and partially reflexed, without a free limb and appendage, as in the other tropical African species. Column very stout, 1 lin. long; rostellum bilobed, with linear-oblong arms, ½ lin. long.

Nile Land. Abyssinia: Begemeder; River Reb, 6500 ft., *Schimper*, 1295!

Also found in Natal.

ORDER CXXXIV. **SCITAMINEÆ.** (By J. G. BAKER.)

Flowers usually hermaphrodite, rarely unisexual by abortion. Perianth superior, usually in two distinct rows of 3 lobes each. Sepals equal, free or united in a tube at the base. Corolla tubular at the base; lobes equal, or the dorsal larger and concave. Androecium very irregular, normally in two rows of 3 lobes each; stamen usually single, linear, with a 2-celled or 1-celled anther. Ovary inferior, usually 3-celled; style long, often involute at the apex; stigma terminal; stylodia often present. Fruit crowned by the persistent calyx, usually 3-celled, capsular or indehiscent. Seeds 1 or many in a cell, albuminous; albumen hard or farinaceous; embryo central, straight or horseshoe-shaped.—Herbs, rarely shrubs, usually perennials; rootstock often horizontal, dry or tuberous. Leaves oblong or lanceolate, cauline or all radical. Inflorescence spicate, racemose or panicled, produced from the end or side of the leafy stem or direct from the rootstock. Petaloid staminodia often showy and brightly coloured.

Species 500, spread through the Tropical regions of both hemispheres.

Of the common officinal species of the order, *Maranta arundinacea*, *Curcuma longa*, and *Zingiber officinale* are widely cultivated throughout Tropical Africa. The specimen in the herbarium of the British Museum of *Zingiber dubium*, Afzel., collected by Dr. Daniell, and cited as authentic by Horaninow, is not in flower, but, as far as it goes, agrees with *Z. officinale*.

TRIBE I. **Zingibereæ.**—*Stamen* 1; *anther 2-celled; embryo straight.*

Lateral staminodia large and petaloid . . . . 1. KÆMPFERIA.
Lateral staminodia rudimentary or suppressed.
  Acaulescent. Flowers in the centre of a rosette of leaves . . . . . 2. CADALVENA.
  Inflorescence dense, capitate, peduncled.
    Stamen placed in the centre of a large petaloid process . . . . . 3. COSTUS.
    Stamen without any petaloid border . . . 4. AMOMUM.
  Inflorescence thyrsoid . . . . . 5. RENEALMIA.

TRIBE II. **Marantaceæ.**—*Stamen* 1; *anther* 1-*celled; ovules solitary; embryo curved.*

Ovary with 2 cells suppressed . . . . . 6. THALIA.
Ovary with 3 perfect cells.
  Inflorescence lax.
    Inflorescence panicled; bracts cylindrical . . 7. DONAX.
    Inflorescence simple or forked; bracts broad . 8. TRACHYPHRYNIUM.
  Inflorescence dense.
    Spikes produced direct from the rhizome on a short peduncle . . . . . 9. THAUMATOCOCCUS.
    Spikes lateral from a long petiole . . . 10. PHRYNIUM.
    Spikes usually terminal from a leafy stem (in Tropical African species) . . . . 11. CALATHEA.

TRIBE III. **Cannaceæ.**—*Stamen* 1; *anther* 1-*celled; ovules many; embryo straight.*

The only genus . . . . . 12. CANNA.

TRIBE IV. **Museæ.**—*Perfect stamens* 5; *anthers* 2-*celled.*

The only African genus . . . . . 13. MUSA.

1. KÆMPFERIA, Linn.; Benth. et Hook. f. Gen. Pl. iii. 641.

Calyx subcylindrical or funnel-shaped, shortly toothed. Corolla-tube cylindrical, exserted from the calyx; lobes equal, lanceolate. Lateral staminodia large, petaloid; lip broad, emarginate; fertile stamen with 2 diverging cells and a small crest. Ovary 3-celled; ovules many in a cell; style filiform; stigma peltate, minutely ciliated round the edge. Fruit ovoid or oblong, with a membranous pericarp. Seeds subglobose, with a short lacerated aril and straight embryo.—Root of many nodose fibres. Leaves few, sessile or arising from a short stem. Flowers in a tuft from the centre of the rosette of leaves or in a raceme on a short peduncle, often large and brightly coloured.

Species about 30, mainly in Tropical Asia.

Flowers usually solitary, on short peduncles.
- Lip obscurely emarginate . . . . . 1. *K. Kirkii.*
- Lip deeply emarginate . . . . . 2. *K. æthiopica.*

Flowers many to a stem.
- Calyx funnel-shaped, about $\frac{1}{2}$ in. long.
  - Corolla-lobes oblong, $\frac{1}{2}$–$\frac{3}{4}$ in. long.
    - Flowers usually rose-red . . . . . 3. *K. rosea.*
    - Flowers dark lilac . . . . . 4. *K. Carsoni.*
  - Corolla-lobes lanceolate, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long . . . 5. *K. pleiantha.*
- Calyx cylindrical, $1\frac{1}{2}$–2 in. long.
  - Calyx obliquely truncate at the apex . . . 6. *K. brachystemon.*
  - Calyx distinctly toothed at the apex . . . 7. *K. macrosiphon.*

1. **K. Kirkii,** *Schumann in Engl. Jahrb.* xv. 426 (*excl. syn.*). Leaf-stem 3–4 in. long; leaves about 4, crowded at its apex, oblong, acute, moderately firm, glabrous, 8–9 in. long, $2\frac{1}{2}$–3 in. broad at the middle. Flowering stems short, slender, 1-flowered. Calyx funnel-shaped, shortly toothed, $\frac{1}{2}$–$\frac{5}{8}$ in. long. Corolla-tube rather longer than the calyx; lobes oblong-lanceolate, 1 in. long. Staminodia more than twice as long as the corolla-lobes, pale rose-purple; lateral obliquely obovate-cuneate, above 1 in. broad; lip rounded at the apex, slightly emarginate, 2 in. broad, with a yellow mark at the throat; fertile stamen much shorter; anther $\frac{1}{4}$ in. long, with a small truncate entire crest.—*Cienkowskia Kirkii,* Hook. f. in Bot. Mag. t. 5994; Ill. Hort. 1883, t. 495.

Nile Land. British East Africa: Jomvu, near Mombasa, *Wakefield,* sketch 8!

Mozamb. Dist. German East Africa: coast opposite Zanzibar, *Kirk!*

This is totally different from *K. rosea,* Schweinf., with which Schumann and Durand have united it.

2. **K. æthiopica,** *Benth. Gen. Plant.* iii. 642. Leafy stem not fully developed till after the flowers; leaves 3–5, not crowded at the top, oblong-lanceolate or lanceolate, 9–18 in. long, 1–3 in. broad at the

middle, moderately firm, glabrous. Flowers usually solitary on short slender radical peduncles, with 1–2 large membranous sheathing bract-leaves. Calyx subcylindrical, 1½ in. long, shortly toothed, and finally shortly slit down one side. Corolla-tube rather longer than the calyx; lobes lanceolate, 1½ in. long. Staminodia more than twice as long as the corolla-lobes, usually bright red-purple, drying to violet, with a yellow throat, rarely all pale yellow; lateral staminodia obovate-cuneate; 1 in. broad; lip rounded at the apex, deeply emarginate, 2 in. broad; fertile stamen shorter than the corolla-lobes; anther ½ in. long, with a small truncate crest.—Var. *angustifolia*, Ridley in Journ. Bot. 1887, 131. *Cienkowskia æthiopica*, Solms in Schweinf. Beitr. Fl. Ethiop. 197, t. 1.

Upper Guinea. Senegambia, *Heudelot*, 876! Gold Coast: Salaga, *Krause!* north bank of the Gambia River, *Ozanne!* Lagos: Yoruba; common in grassy places from Oyo to Illorin, *Barter*, 3427! Southern Bornu: Musgu, *Vogel*, 99!

Nile Land. Senaar, *Cienkowski.* Galabat: banks of the River Gendua, *Schweinfurth*, 1341! Abyssinia: Woina, *Steudner*, 496! British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 131! 1863! Kibwezi, *Scott-Elliot*, 6299!

Lower Guinea. Angola: Pungo Andongo; near Conde, *Welwitsch*, 683! *Mechow*, 244.

Mozamb. Dist. German East Africa: east shore of Lake Tanganyika, *Scott-Elliot*, 8217! between Uyui and the coast, *Taylor!* Unyamwezi; Msalala, *Hannington!* Rovuma River, *Kirk!* Portuguese East Africa: Morambala mountain, *Kirk!* British Central Africa: Urungu; Fwambo, *Carson*, 115! Nyasaland; Karonga, *Carson*, 1890! between Lake Tanganyika and Lake Nyasa, *Johnston!* Manganja Hills, *Meller!* Shire Highlands, *Buchanan*, 247! 248! Mandala, *Scott-Elliot*, 8546! between Blantyre and Metope, 2000 ft., *Scott!* near Mount Sochi, 3000 ft., *Kirk!*

3. **K. rosea,** *Schweinf. ex Benth. & Hook. f. Gen. Pl.* iii. 642. Leaves about 4, with long distinct channelled petioles, not fused into a false stem; blade moderately firm, glabrous, usually oblong, acute, under a foot long, 4–5 in. broad. Flowers many, racemed at the apex of a long slender peduncle, contemporary with the leaves; bracts oblong, brown, membranous, ½–1 in. long; pedicels very short. Calyx funnel-shaped, ½ in. long, deeply 3-lobed. Corolla-tube twice as long as the calyx; lobes oblong, ½–¾ in. long. Staminodia more than twice as long as the corolla-lobes, light or dark pink, with two dark spots at the throat, rarely white or yellow; lateral ½–¾ in. broad; lip emarginate, 1½–2 in. broad; fertile stamen not longer than the corolla-lobes; anther-cells ¼ in. long.

Nile Land. British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 1946, ser. iii. 205! Niamniam; Gumango Hill, *Schweinfurth*, 3878! Nyika country, near Mombasa, *Wakefield! Hildebrandt*, 2014!

Mozamb. Dist. German East Africa: plains above Bagamoyo, *Kirk!* between Uyui and the coast, *Taylor!* Rovuma River, *Kirk! Meller!* Portuguese East Africa: Lower Shire Valley, *Kirk!* between Sena and the Shire River, *Kirk!* between Lupata and Sena, *Kirk!* Mozambique, *Forbes!* British Central Africa: Nyasaland; Chimapas Village, *Nicholson!* Shire Highlands, *Buchanan*, 157! *Scott-Elliot*, 8636! Mandala, *Scott-Elliot*, 8547! Mount Malosa, 4000–6000 ft., *Whyte!* Zomba and vicinity, 2500–3500 ft., *Whyte!* and without precise locality, *Buchanan!* 501! 650! *Scott!*

4. **K. Carsoni,** *Baker.* Leaves not fully developed till after the flowers; blade oblong, acute, moderately firm, glabrous. Flowers many on a short slender peduncle, with two large, sheathing, membranous bracts; pedicels short, ascending; proper bracts oblong-navicular, membranous, $\frac{1}{2}$–1 in. long. Calyx funnel-shaped, $\frac{1}{2}$ in. long, shortly 3-toothed. Corolla-tube not much longer than the calyx; lobes oblong, $\frac{3}{4}$ in. long. Staminodia bright lilac, 2–$2\frac{1}{2}$ in. long; lateral $\frac{3}{4}$ in. broad; lip twice as broad, scarcely emarginate; fertile stamen shorter than the corolla-lobes; anther $1\frac{1}{4}$ in. long.

Mozamb. Dist. British Central Africa: Nyasaland; Karonga, *Carson!*

Intermediate between *K. æthiopica* and *K. rosea.*

5. **K. pleiantha,** *Schumann in Engl. Jahrb.* xv. 425. Leafy stem a foot or more long. Leaves lanceolate, acute, complicate, glabrous, 4–8 in. long, 1–$1\frac{1}{2}$ in. broad at the middle. Flowers 4–6, on a peduncle nearly or quite as long as the leafy stem; bracts oblong-navicular, membranous, $1\frac{1}{2}$–2 in. long. Calyx turbinate, $\frac{1}{2}$ in. long, shortly 3-lobed. Corolla-tube twice as long as the calyx; lobes lanceolate, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long. Staminodia 3 in. long; lip emarginate; fertile stamen much shorter; anther $\frac{1}{4}$ in. long.

Lower Guinea. Angola, *Buchner*, 694, *Mechow*, 559B.

No specimen in the Kew Herbarium.

6. **K. brachystemon,** *Schumann in Engl. Pfl. Ost-Afr. C.* 149. Leaves unknown. Flowers produced before the leaves, many on a slender peduncle. Calyx obliquely truncate, $1\frac{1}{2}$–2 in. long. Corolla-lobes linear-lanceolate, acuminate. Lip violet; anther scarcely $\frac{1}{5}$ in. long, with a recurved crest.

Mozamb. Dist. German East Africa: Usambara, *Holst*, 3100! Mukulumussi, *Volkens*, 201.

No specimen in the Kew Herbarium.

7. **K. macrosiphon,** *Baker.* Leaves contemporary with the flowers, furnished with short free petioles; blade oblong, acuminate, 4–6 in. long, 2–$2\frac{1}{2}$ in. broad at the middle, moderately firm, glabrous. Flowers many on a short peduncle; bracts oblong-navicular, scariose, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Calyx cylindrical, $1\frac{1}{2}$ in. long, distinctly toothed. Corolla-tube very slender, 1 in. longer than the calyx; lobes linear, $\frac{3}{4}$–1 in. long. Staminodia pale uniform blue, slightly longer than the corolla-lobes; lip rounded at the apex, 1 in. broad; fertile stamen not seen.

Nile Land. British East Africa: Nyika country, near Mombasa, *Wakefield!*

2. **CADALVENA,** Fenzl in Sitz. Akad. Wissen. Wien, Math. Nat. li. Abth. ii. 139.

Calyx membranous, cylindrical, shortly toothed at the apex. Corolla-tube shortly exserted from the calyx; lobes large, membranous, equal, lanceolate. Lateral staminodia not produced; lip large, petaloid,

rounded at the apex; anther 2-celled, placed in the centre of a strap-shaped petaloid process. Ovary 3-celled; ovules many in a cell; style filiform; stigma dilated, ciliated round the edge. Capsule membranous. Seeds globose, with a straight central embryo.—Acaulescent annuals, with a rosette of large cuneate leaves spreading on the ground and few large fugitive flowers on short pedicels from the centre of the rosette.

Endemic.

Habit, calyx and corolla of *Kæmpferia*, section *Soncorus*; stamen and staminodia of *Costus*.

Leaves much imbricated, not thickened at the base .	1. *C. spectabilis.*
Leaves not imbricated, thickened and spongy at the base	2. *C. pistiæfolia.*

1. **C. spectabilis,** *Fenzl in Sitz. Akad. Wissen. Wien, Math. Nat.* li. *Abth.* ii. 140. Leaves usually 4 in a spiral rosette, obovate-cuneate, much imbricated, 2–8 in. long and broad, pale green, membranous, glabrous, not thickened at the base. Flowers few, on short pedicels from the centre of the rosette, contemporary with the leaves. Calyx short, funnel-shaped. Corolla-lobes lanceolate, ascending, 1½–2 in. long. Lip pale yellow, obovate-cuneate, 3 in. long 1½–2 in. broad; fertile stamen shorter than the corolla-lobes; anther-cells nearly parallel, ½ in. long, overtopped by a long pale yellow strap-shaped petaloid process.—*Kæmpferia spectabilis,* Benth. Gen. Plant. iii. 642. *Costus spectabilis,* Schumann in Engl. Jahrb. xv. 422, and in Engl. Pfl. Ost-Afr. C. 150.

Nile Land. Upper Senaar; Fazokl, *Boriana;* Jur; Jur Ghattas, *Schweinfurth,* 1888! Galabat: banks of the Gendua River, *Schweinfurth,* 1345!

Lower Guinea. Congo: Loukoungou, 700–2000 ft., *Hens,* 353!

Mozamb. Dist. German East Africa: Usambara, *Holst!* Portuguese East Africa: Morambala Mountain, 2000–3000 ft., *Kirk! Waller!* British Central Africa: Nyasaland; Shire Highlands, *Buchanan,* 26! near Blantyre, *Last!* Mount Sochi, *Scott-Elliot,* 8521! between Lake Tanganyika and Lake Nyasa, *Johnston!* and without precise locality, *Buchanan,* 532! 668!

2. **C. pistiæfolia,** *Baker.* Closely allied to *C. spectabilis,* but leaves more cuneate and not imbricated, thickened and spongy at the base, as in *Pistia,* ovary shorter, corolla-lobes broader and anther-cells only half as long.—*Costus pistiæfolius,* Schumann in Engl. Jahrb. xv. 424.

Lower Guinea. Angola: in woods at Malange, *Teuscz,* 315!

No specimen in the Kew Herbarium.

3. **COSTUS,** Linn.; Benth. et Hook. f. Gen. Pl. iii. 646.

Calyx funnel-shaped; teeth ovate, erect, equal. Corolla-tube funnel-shaped; lobes oblong, equal. Lateral staminodia suppressed or minute; lip large, obovate-cuneate with incurved edges; anther 2-celled, placed in the centre of a strap-shaped petaloid process; ovary 3-celled; ovules many in a cell; style filiform; stigma dilated,

usually appendiculate at the back. Capsule ovoid or globose, trisulcate, splitting between the ribs. Seeds subglobose, with a small aril and thick straight embryo.—Terrestrial or epiphytic herbs. Flowers usually in dense spikes at the end of long leafy stems, rarely on peduncles produced direct from the rhizome; outer bracts suborbicular or ovate, firm in texture; bracteoles oblong, membranous. Lip large and showy, white or red, with usually a blotch of yellow in the middle.

Species about 30, cosmopolitan in the Tropical zone, concentrated in America.

Spike terminal on the leafy stem, of which the nodes are produced.	
Ligules large.	
Bracts with leafy tips	1. *C. phyllocephalus.*
Bracts without leafy tips	2. *C. ligularis.*
Ligules short.	
Leafy stem long, sarmentose	3. *C. sarmentosus.*
Leafy stems erect.	
Outer bracts $\frac{3}{4}$–1 in. broad.	
Leaves glabrous or slightly pubescent beneath	4. *C. afer.*
Leaves densely grey, silky beneath	5. *C. lucanusianus.*
Outer bracts larger	6. *C. trachyphyllus.*
Spike terminal on a leafy stem, of which the leaves are crowded at the tip	7. *C. nudicaulis.*
Spikes terminal on a very short leafy stem, which bears only one leaf	8. *C. englerianus.*
Spikes lateral on a leafy stem	9. *C. lateriflorus.*
Spikes produced from the rootstock distinct from the leafy stems.	
Spikes 2–4 flowered.	
Leaves glabrous	10. *C. bicolor.*
Leaves pubescent.	
Leaves obovate, 2–3 in. long	11. *C. tappeinbeckianus.*
Leaves oblong, 4–6 in. long	12. *C. pauciflorus.*
Spikes many-flowered.	
Bracts $\frac{3}{4}$–1 in. broad	4. *C. afer, var. maculatus.*
Bracts 2–3 in. broad	13. *C. giganteus.*

1. **C. phyllocephalus,** *Schumann in Engl. Jahrb.* xv. 420. Leafy stem terete, glabrous, very slender, under a foot long. Leaves obovate-oblong, 5–6 in. long, about 2 in. broad at the middle, acuminate, narrowed to the base, glabrous on both sides; petiole very short; ligule large, obliquely truncate, membranous, subacute, mucronate below the apex. Spike many-flowered, 2 in. diam.; bracts furnished with a leafy point. Calyx above $\frac{1}{2}$ in. long; lobes very short. Corolla-lobes oblong-lanceolate, $1\frac{1}{2}$ in. long. Lip obovate-cuneate, 2 in. long and broad; petaloid filament much shorter than the lip, $\frac{1}{3}$–$\frac{1}{2}$ in. broad; anther-cells $\frac{1}{3}$ in. long.

Lower Guinea. Angola: banks of the Quango River, *Teuscz*, 508.

No specimen in the Kew Herbarium.

2. **C. ligularis,** *Baker.* Leafy stem 4 ft. long. Leaves oblanceolate-oblong, acuminate, 6–8 in. long, about 3 in. broad above the middle,

cuneate at the base, moderately firm, glabrous on both sides; petiole scarcely any; ligule oblong, brown, membranous, obtuse, 1–1½ in. long. Flowers many in a sessile globose cluster, terminal on the leafy stem; bracts orbicular, ¼ in. broad. Calyx ¼ in. long, toothed at the tip. Corolla-lobes above 1 in. long. Lip 2 in. long and broad, pink; process of fertile stamen an inch shorter than the lip.

Lower Guinea. Corisco Bay, by the Muni River, *Mann*, 1628!

3. **C. sarmentosus,** *Bojer in Ann. Sc. Nat. sér.* 2, iv. 262, *t.* 8. Stems slender, sarmentose, reaching a length of 20–30 ft. Leaves oblong-lanceolate, a span long, 2 in. broad at the middle, softly pubescent beneath; petiole very short, villous; ligule short, densely ciliated. Spikes sessile at the apex of the leafy stem, 1½ in. diam.; bracts suborbicular, the lower 1 in. broad. Calyx shorter than the bract. Corolla-lobes oblong, acute. Lip obovate-cuneate, 1 in. broad, white with a yellow blotch in the middle, fimbriated at the margin; process of fertile stamen nearly as long as the lip.—Bojer, Hort. Maurit. 328.

Mozamb. Dist. Island of Zanzibar, on the banks of streams amongst tall grass, *Bojer!*

No specimen in the Kew Herbarium.

4. **C. afer,** *Ker in Bot. Reg. t.* 683. Terrestrial. Leafy stems erect, reaching a length of 10–12 ft. Leaves very variable in size, oblong or oblong-lanceolate, 3–9 in. long, 1–3 in. broad at the middle, acuminate, moderately firm, rounded at the base to a short broad petiole, glabrous or softly pubescent beneath; ligule very short. Spikes globose, 1–3 in. long, 1½–2 in. diam., usually sessile at the end of the leafy stems; bracts suborbicular, glabrous, the outer ¾–1 in. long and broad. Calyx shorter than the bract; lobes ovate, obtuse. Corolla-lobes oblong, acute, about 1 in. long. Lip 1½ in. long and broad, white or red, with a yellow centre; process that bears the anther ¼–⅓ in. broad, nearly as long as the lip, incurved at the tip.—Hook. in Bot. Mag. t. 4979; Horan. Prodr. Scit. 36; Ridley in Journ. Bot. 1887, 131; Schumann in Engl. Jahrb. xv. 422.

Upper Guinea. Island of Los, *Selwyn!* Sierra Leone, *Afzelius! Don! Vogel*, 80; *Scott-Elliot*, 3886! Gold Coast, *Burton!* Lower Niger; Abo, *Vogel! Barter*, 417! Fernando Po, *Mann*, 439! Cameroons: Cameroon River, *Mann*, 2143!

Nile Land. British East Africa: Niamniam; Nabambisso River, *Schweinfurth*, ser. iii. 204! Uganda, *Scott-Elliot*, 7330!

Lower Guinea. Congo, *Smith!* Angola: Golungo Alto; between Trombeto and Cambondo, common on the banks of the streams, *Welwitsch*, 6464!

Var. *maculatus*, Baker. Flowering stems produced direct from the root, covered by imbricate leaf sheaths. *C. maculatus*, Rosc. Scit. t. 82.

Upper Guinea. Sierra Leone, *Don.*

Dried specimens of a plant cultivated at Kew in 1883 show the tall leafy stems of the type, and the short leafless stems of the variety from the same root.

5. **C. lucanusianus,** *J. Braun & Schumann in Mitth. Deutsch. Schutzgeb.* ii. (1889) 151. Leafy stem 6–7 ft. long. Leaves shortly petioled, oblong, 8–10 in. long, 2–3 in. broad, gradually acuminate,

subcordate at the base, minutely pubescent above, clothed with grey silky hairs beneath; ligule with spreading hairs. Spike terminal, globose or oblong, 3–4 in. diam.; bracts densely imbricate, nearly 1 in. long. Calyx much exserted, cut one-third down, glabrous, ciliate. Corolla-lobes lanceolate, 1 in. or more long. Lip obovate, undulate on the upper margin, 2 in. long; process of fertile stamen lanceolate, acuminate, shorter than the lip.

Upper Guinea. Cameroons: in forest near Batanga, *Braun !*

Lower Guinea. Lower Congo, *Laurent !*

No specimen in the Kew Herbarium.

6. **C. trachyphyllus,** *Schumann in Engl. Jahrb.* xv. 420. Leafy stem long, moderately stout. Leaves oblong, acute, 10–12 in. long, 3–4 in. broad at the middle, cuneate at the base, firm in texture, pubescent beneath; petiole very short; ligule short, truncate. Spikes many-flowered, oblong, terminal, 3 in. long, 2 in. diam.; outer bracts orbicular, glabrous, $1\frac{1}{4}$ in. broad. Calyx funnel-shaped, $\frac{1}{2}$ in. long; teeth $\frac{1}{3}$–$\frac{1}{4}$ as long as the tube. Corolla-lobes oblong, acute, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long. Lip obovate, $2\frac{1}{2}$–3 in. long, $1\frac{1}{2}$ in. broad, white or tinged with rose-red; petaloid filament about 1 in. shorter than the lip, obtuse; anther $\frac{1}{3}$ in. long, placed half-way down the filament.

Nile Land. British East Africa: Niamniam; Mbrwole River, *Schweinfurth*, ser. iii. 206 ! Yuru River, *Schweinfurth*, 3268 !

7. **C. nudicaulis,** *Baker.* Epiphytic. Stem naked, under 1 ft. long, bearing at its tip a dense rosette of unequal, oblanceolate-oblong, acute leaves, the longest 4 in. long, under 2 in. broad at the middle, moderately firm, glabrous on both sides. Spike many-flowered, oblong, sessile at the tip of the stem in the centre of the rosette of leaves; bracts small, oblong. Calyx not protruding beyond the bract. Corolla-lobes oblanceolate-oblong, $1\frac{1}{2}$ in. long. Lip 2 in. long and broad, pale red; process of fertile stamen about 1 in. shorter than the lip; anther-cells $\frac{1}{3}$ in. long.

Lower Guinea. Gaboon: Gaboon River, *Mann*, 1033 !

8. **C. englerianus,** *Schumann in Engl. Jahrb.* xv. 419, *t.* 13. Stems very short, arising from a long slender creeping rootstock, bearing only a single large membranous sheath-leaf and a single developed leaf. Leaf broadly oblong, 3–5 in. long, 2–3 in. broad, firm, glabrous, obtuse. Flowers 2–3 in a spike at the tip of the stem; bracts oblong-lanceolate, scariose, under 1 in. long. Calyx $\frac{1}{2}$–$\frac{5}{8}$ in. long, subcylindrical, minutely 3-toothed. Corolla-lobes oblanceolate, oblong, above 1 in. long. Lip obovate, white with a patch of yellow in the middle, $1\frac{1}{2}$–2 in. long, under 1 in. broad; petaloid filament $\frac{1}{4}$ in. broad; anther very small.—N. E. Br. in Gard. Chron. 1892, xii. 789. *C. unifolius*, N. E. Br. in Gard. Chron. 1892, xii. 696.

Upper Guinea. Cameroons: in forest west of Barombi-ba-Mbu, on rocks on the bed of a river, *Preuss*, 461. Gold Coast, cultivated specimen !

Introduced into cultivation by Messrs. Sander, of St. Albans, in 1891.

9. **C. lateriflorus**, *Baker.* Leafy stem apparently sarmentose. Leaves oblong, 5–7 in. long, $2\frac{1}{2}$–3 in. broad at the middle, obtusely cuspidate, cuneate at the base, moderately firm, glabrous on both sides; petiole and ligule very short. Flowers many in a cluster from the side of the stem; bracts small, oblong. Calyx subcylindrical, firm in texture, $\frac{3}{4}$ in. long, shortly toothed at the apex. Corolla-lobes oblong-lanceolate, above 1 in. long. Lip sulphur-yellow, 2 in. long and broad, irregularly toothed round the outer edge; process of fertile stamen nearly 1 in. shorter than the lip; anther $\frac{1}{3}$ in. long.

Lower Guinea. Corisco Bay: Mount John, River Kongui, *Mann*, 1629!

10. **C. bicolor,** *J. Braun & Schumann in Mitth. Deutsch. Schutzgeb.* ii. 152. Leafy stem slender, 10–20 in. long. Leaves oblong-lanceolate, 2–4 in. long, acuminate, narrowed to the base, firm in texture, glabrous on both surfaces. Flowering peduncle short, with only sheaths from the nodes. Spike 2-flowered; bracts not longer than the ovary. Calyx violet, funnel-shaped, $\frac{1}{2}$ in. long; lobes very short. Corolla 1 in. long; lobes narrowly lanceolate. Lip obovate, golden-yellow, 2 in. long, crenulate on the margin; process of fertile stamen lanceolate, acuminate.

Upper Guinea. Cameroons: Muha, near Malimba, in woods, *Braun!*

No specimen in the Kew Herbarium.

11. **C. tappenbeckianus,** *J. Braun & Schumann in Mitth. Deutsch. Schutzgeb.* ii. 152. Leafy stem 1–$1\frac{1}{2}$ ft. long. Leaves shortly petioled, obovate, 2–3 in. long, acute, rounded at the base, pilose beneath and on the midrib. Fertile stem very short, not leafy. Spike oblong, 4-flowered; bracts ovate, subcomplicate, nearly an inch long. Calyx under $\frac{1}{2}$ in. long, cut $\frac{1}{4}$ down. Corolla-lobes lanceolate, hyaline. Lip obovate, above 2 in. long, undulated at the apex; process of fertile stamen lanceolate.

Upper Guinea. Cameroons: Batanga, in the forest, *Braun.*

No specimen in the Kew Herbarium.

12. **C. pauciflorus,** *Schumann in Engl. Jahrb.* xv. 421. Leafy stem under a foot long, arising from a creeping rootstock, with two sheaths in the lower half and two leaves in the upper half some distance apart. Leaves oblong, 4–6 in. long, 2–3 in. broad at the middle, moderately firm, obtuse, rounded at the base, pubescent beneath; petiole and ligule both very short. Flowers 2–3 in a spike, arising direct from the rootstook on a short peduncle; bracts ovate, scariose, the outer $1\frac{1}{4}$ in. long. Calyx spathaceous, slit in the upper third. Corolla-lobes oblanceolate, membranous, obtuse, $1\frac{1}{4}$ in. long. Lip 2 in. long and broad, obovate-cuneate, tinged with lilac; petaloid filament obtuse, half as long as the lip; anther-cells placed half way down it, $\frac{1}{4}$ in. long.

Lower Guinea. Gaboon: Munda; Sibange Farm, swamps in forest-clearings, *Soyaux*, 119!

A very distinct species, with a flower spike and bracts like those of an *Amomum*.

13. **C. giganteus,** *Welw. ex Ridley in Journ. Bot.* 1887, 131. Terrestrial. Rootstock creeping. Leafy stems erect, very stout, reaching to a length of 20–24 ft. Leaves 1–2 ft. long, 4–5 in. broad above the middle, acute, quite glabrous on both sides, narrowed gradually to a short broad petiole; ligule truncate, above $\frac{1}{2}$ in. long. Scapes in tufts from the rootstock, 4–10 ft. long, $1\frac{1}{2}$ in. diam.; spikes oblong, 5–6 in. long, 3–4 in. diam.; lower bracts, $2\frac{1}{2}$ in. broad. Calyx $\frac{3}{4}$ in. long; lobes shorter than the tube. Corolla-lobes oblong, acute, 2 in. long. Lip not much longer than the corolla-lobes, fimbriate at the margin; anther placed above the middle of its acute petaloid connective.—Schumann in Engl. Jahrb. xv. 422.

Lower Guinea. St. Thomas and Princes Islands, *Mann*, 1146! Island of St. Thomas; Mount Caffé, by streams in primeval woods, 2000–2800 ft., *Welwitsch*, 6465!

4. **AMOMUM**, Linn.; Benth. et Hook. f. Gen. Pl. iii. 644.

Calyx funnel-shaped, obscurely toothed, shortly slit down one side. Corolla-tube cylindrical, not much longer than the calyx; upper lobe arcuate, oblong-navicular, 2 lower spreading, lanceolate. Lateral staminodia suppressed; lip large, petaloid, usually obovate-cuneate; fertile stamen with a narrow or filiform filament, two divergent anther-cells and, in the Tropical African species, a 3-lobed petaloid crest. Ovary 3-celled; ovules many in a cell; style filiform; stigma subglobose, ciliate round the margin; stylodia gland-like, fleshy. Fruit ovoid, acuminate, with a thick fleshy pericarp. Seeds subglobose or angled by pressure, with a thin papery aril and straight central embryo.—Rootstock not fleshy. Leafy stem distinct from the flowering stems. Flowers solitary or in dense spikes, with imbricate scariose bracts. Lip large and decorative. Seeds of some of the species aromatic (Grains of Paradise).

Species 100, the others Tropical Asiatic and Polynesian.

*Flower-spikes sessile or shortly peduncled.

Lip large, obovate-cuneate.
Flowers solitary.
Fruit not sulcate vertically.
Crest of anther ovate cuspidate . . . 1. *A. arundinaceum.*
Crest of anther square . . . . . 2. *A. Melegueta.*
Fruit sulcate vertically . . . . . 3. *A. sulcatum.*
Flowers few in a spike.
Leaves glabrous.
Leaves $1\frac{1}{2}$–$1\frac{3}{4}$ in. broad.
Leafy stem 2–3 ft. long . . . . 4. *A. alboviolaceum.*
Leafy stem 4–5 ft. long . . . . 5. *A. Granum-Paradisi.*
Leaves 2–3 in. broad.
Leaves narrowed to the base.
Leaves subsessile.

Leafy stem 4–5 ft. long . . . 6. *A. latifolium.*
Leafy stem 9–10 ft. long . . . 7. *A. kayserianum.*
Leaves distinctly petioled.
Ligule small, truncate . . . 8. *A. Mannii.*
Ligule large, rounded at the apex . 9. *A. Sceptrum.*
Leaves cordate at the base . . . 10. *A. macrolepis.*
Leaves more or less hairy.
Leaves $1\frac{1}{4}$–$1\frac{1}{2}$ in. broad.
Lip rose-red . . . . . 11. *A. glaucophyllum.*
Lip pale violet with a yellow throat . 12. *A. leptolepis.*
Lip purple . . . . . 13. *A. limbatum.*
Leaves 2–$2\frac{1}{2}$ in. broad.
Leaves with long hairs on both sides . 14. *A. pilosum.*
Leaves glabrous above, finely pubescent below . . . . . 15. *A. subsericeum.*
Flowers many in a spike . . . . 16. *A. citratum.*
Lip small, oblong.
Leaves $1\frac{1}{2}$–3 in. broad . . . . . 17. *A. angustifolium.*
Leaves $4\frac{1}{2}$–5 in. broad . . . . . 18. *A. polyanthum.*
**Flower-spike with a long simple peduncle.
Leaves $1\frac{1}{2}$–2 in. broad . . . . . 19. *A. cereum.*
Leaves 3–4 in. broad.
Leaves glabrous beneath . . . . 20. *A. zambesiacum.*
Leaves softly hairy beneath . . . . 21. *A. Elliotii.*
***Flower-spike with a long-branched peduncle.
Lip large, obovate-cuneate.
Leaves glabrous.
Leaves 2–$2\frac{1}{2}$ in. broad . . . . 22. *A. longiscapum.*
Leaves 6–7 in. broad . . . . 23. *A. giganteum.*
Leaves hairy on the veins . . . . 24. *A. luteoalbum.*
Lip small, oblong . . . . . 25. *A. sanguineum.*

1. **A. arundinaceum,** *Oliv. & Hanb. in Journ. Linn. Soc.* vii. 109. Rhizome slender, wide-creeping. Leafy stem slender, 4–5 ft. long. Leaves lanceolate, acuminate, firm in texture, glabrous, 6–10 in. long, $\frac{3}{4}$–1 in. broad, sessile on the sheath, narrowed to the base; ligule small, brown. Spikes 1-flowered. Peduncle short, covered by obtuse, much imbricated brown bracts. Corolla-lobes nearly 3 in. long; upper oblong, obtuse, $1\frac{1}{2}$ in. broad; lateral lanceolate. Lip obovate-cuneate, 3 in. long, 2 in. broad, much crisped towards the margin; anther-crest with a moderately large ovate cuspidate erect central lobe and two erecto-patent lanceolate side lobes. Fruit ovoid, 3 in. long, $1\frac{1}{2}$ in. diam., not sulcate. Seeds ellipsoid, black, shining, not aromatic.—Baker in Hook. Ic. t. 2476.

Lower Guinea. Corisco Bay, *Mann*, 1903!

2. **A. Melegueta,** *Rosc. Scit. t.* 98. Rhizome slender, wide-creeping. Leafy stem 4–5 ft. long. Leaves lanceolate, acuminate, firm, glabrous, the lower 6–9 in. long, $\frac{3}{4}$–1 in. broad, narrowed at the base, nearly sessile on the sheath; ligule very small. Flowers solitary, shortly peduncled, 3–4 in. long. Upper bracts oblong, minutely apiculate,

1½–2 in. long. Upper corolla-lobe oblong, 2–3 in. long; lateral lanceolate. Lip obovate-cuneate, 1½–2 in. broad, pure white or tinged with pink; central lobe of anther-crest quadrate, crenate; side lobes spreading, lanceolate. Capsule ampulliform, glabrous, red or orange when ripe, not sulcate, about 3 in. long by 1 in. diam. Seeds aromatic, globose, brown, ⅙ in. diam.—Hook. f. in Kew Journ. Bot. vi. 293; Horan. Prodr. 29; Bentl. & Trim. Med. Pl. t. 268; Ridl. in Journ. Bot. 1887, 130.

Upper Guinea. Sierra Leone: Bayabaya, *Scott-Elliot*, 4577! Yoruba, *Daniell!* Fernando Po, *Daniell!*

Lower Guinea. Princes Island, *Mann*, 1054B! *Welwitsch*, 6459! Island of St. Thomas, *Mann*, 1054A! *Moller! Quintas! Welwitsch*, 6450. Congo (ex *Roscoe*).

Var. *violaceum*, Ridl. loc. cit. Flowers bright violet, with lip shorter than in the type, and corolla-tube densely transversely plicate.

Lower Guinea. Angola: Golungo Alto; on banks of streams, *Welwitsch*, 6457! 6458!

3. **A. sulcatum,** *Oliv. & Hanb.* Rootstock wide-creeping. Leaves oblong-lanceolate, glabrous on both sides, sessile on the sheath, the leaves 6–8 in. long, 18–21 lin. broad at the middle; ligule small, rounded. Spike sessile, 1-flowered; bracts oblong-navicular, obtuse or subacute, 1–1¼ in. long. Upper corolla-lobe oblong, 2 in. long, ¾ in. broad; side lobes lanceolate. Lip obovate-cuneate, 2½ in. long, 1¼–1½ in. broad. Fruit ampulliform, glabrous, conspicuously sulcate, like that of *A. Granum-Paradisi*, 2 in. long, 1 in. diam.

Upper Guinea. Liberia: Cape Palmas, *Hoffman*, 14! *Gibson!*

4. **A. alboviolaceum,** *Ridl. in Journ. Bot.* 1887, 130. Rhizome slender. Leafy stems 2–3 ft. long. Leaves oblong-lanceolate, acute, glabrous, 5 in. long, 1½ in. broad; ligule lanceolate, acuminate, 1¼ in. long. Flowers 2–3 in an oblong shortly peduncled spike, inodorous, whitish-violet, about 3 in. long; bracts oblong, obtuse. Lateral lobes of the corolla lanceolate, acuminate. Lip 1½ in. broad, more acuminate than in *A. Melegueta;* anther-cells rather pubescent; central lobe of anther-crest broadly triangular; lateral lobes lanceolate, acuminate. Fruit and seeds not known.

Lower Guinea. Angola: Pungo Andongo; in woods on the right bank of the River Cuanza, *Welwitsch*, 6453!

No specimen in the Kew Herbarium.

5. **A. Granum-Paradisi,** *Linn. ex parte; Hook. f. in Kew Journ.* vi. 295. Rhizome slender, wide-creeping. Leafy stem 4–5 ft. long, bright red at the base. Leaves lanceolate, acuminate, firm, glabrous, 4–8 in. long, 1½–1¾ in. broad at the middle, cuneate at the base, shortly petioled above the sheath; ligule moderately large, obtuse. Spikes 3–4-flowered, oblong; peduncles 2–6 in. long; bracts obtuse, oblong, the upper 1½ in. long. Flowers white, about 3 in. long. Corolla-lobes 2 in. long; upper oblong; lateral lanceolate. Lip obovate-

cuneate, 1½–2 in. broad, yellow at the throat; anther-crest with an entire ovate central lobe and two large lanceolate spreading side-lobes. Fruit ovoid, pubescent, 2–3 in. long, 1½ in. diam., with 9–10 well-marked grooves. Seeds aromatic, globose, shining, ⅙ in. diam.—Hook. in Bot. Mag. t. 4603; Lemaire, Jard. Fleur. t. 178; Horan. Prodr. 29. *A. exscapum*, Sims in Konig & Sims, Ann. i. 548, t. 13; *A. grandiflorum*, Smith, Exot. Bot. ii. 103, t. 111; Rees, Cyclop. xxxix. No. 6; *A. Afzelii*, Rosc. in Trans. Linn. Soc. viii. 354; Smith in Rees, Cyclop. xxxix. No. 7; *A. palustre*, Afzel. Stirp. Med. Nov. 1829, 9.

Upper Guinea. Sierra Leone, *Afzelius!* Lagos, *Moloney! Millen*, 103 of 1894 collection! *Rowland!* Yoruba: Ikomu, *Millson*, 22! Niger Territory: Nupe, *Barter*, 1543! Lower Niger; Abo, *Vogel!* Onitsa, *Barter*, 1787! Niger Delta; Nun River, *Vogel*, 55! Brass, *Barter*, 38! West Africa: without locality, *Daniell!*

6. **A. latifolium,** *Afzel. Remed. Guin.* i. 5. Rootstock slender, wide-creeping. Leafy stem 4–5 ft. long. Leaves oblong-lanceolate, acute, 8–12 in. long, 2–2½ in. broad at the middle, moderately firm, glabrous, narrowed to the base, nearly sessile on the sheath; ligule large, truncate. Spikes 3–4-flowered, shortly peduncled; bracts obtuse. Flowers pure white, about 3 in. long. Upper corolla-lobes oblong, 2 in. long; lateral lanceolate. Lip ovate-cuneate, 2 in. broad. Fruit oblong, glabrous, 3 in. long, 1½ in. diam. Seeds brown, shining, not sulcate, ellipsoid, ⅙ in. long, not aromatic.—Roem. & Schult. Syst. Veg. i. 29, 571; Horan. Prodr. 29; Hook. f. in Kew Journ. vi. 297.

Upper Guinea. Sierra Leone, *Afzelius! Daniell! Graf!* Niger Delta: Grand Bassa, *Herb. Hanbury.*

Lower Guinea. Congo, *Roscoe.*

Native name *Mabooboo.*

7. **A. kayserianum,** *Schumann in Engl. Jahrb.* xv. 415. Rootstock stout, wide-creeping. Leafy stem 9–10 ft. long. Leaves oblong-lanceolate, acute, moderately firm, quite glabrous, 1 ft. long, 2½–3 in. broad at the middle, narrowed to the base, nearly sessile on the sheath; ligule small, truncate. Spikes oblong, 5–6-flowered, shortly peduncled; bracts oblong, obtuse, green, glabrous, the upper 2 in. long. Corolla-lobes 2 in. long; upper oblong-spathulate; lateral lanceolate. Lip white, obovate-cuneate, about an inch broad; anther-crest with a small entire orbicular central lobe and two very large lanceolate falcate side-lobes. Fruit and seeds unknown.

Upper Guinea. Cameroons: near Buea, in low forest, 3000–3500 ft., *Preuss*, 826!

8. **A. Mannii,** *Oliv. & Hanb. in Journ. Linn. Soc.* vii. 110. Rootstock slender, wide-creeping. Leafy stem 4–5 ft. long. Leaves oblong, strongly cuspidate, firm, glabrous, 6–8 in. long, 2–3 in. broad, narrowed to a distinct petiole above the sheath; ligule small, brown, scariose, truncate. Spikes 2–3-flowered; peduncle very short, hidden by the much imbricated oblong obtuse bracts, which are conspicuously spotted with brown on a green ground. Corolla-lobes above 2 in. long;

upper oblong, obtuse, 1 in. broad; lateral lanceolate. Lip obovate-cuneate, 2 in. broad; anther-crest with a small erect central lobe and two spreading linear side-lobes. Fruit and seeds unknown.—Baker in Hook. Ic. t. 2482.

Lower Guinea. Corisco Bay, *Mann*, 1902! Gaboon, cultivated specimen!

9. **A. Sceptrum,** *Oliv. & Hanb. in Journ. Linn. Soc.* vii. 109. Rootstock slender, wide-creeping. Leafy stem 5–6 ft. long. Leaves oblong or oblong-lanceolate, acute, moderately firm, 8–10 in. long, 2–3 in. broad, glabrous on both surfaces, deltoid at the base, shortly petioled above the sheath; ligule large, membranous, rounded at the apex. Peduncle short, few-flowered; bracts glabrous, truncate, conspicuously spotted with purple on a pale green ground, indistinctly ribbed. Flowers about 3 in. long. Upper lobe of the corolla oblong, 2 in. long, above an inch broad; lateral lanceolate. Lip obovate-cuneate, $1\frac{1}{2}$ in. broad, pale lilac with a yellow throat, crisped towards the edge; central lobe of the anther-crest small, deltoid; lateral large, falcate. Dried fruit ampulliform, not grooved, glabrous, 2 in. long, under 1 in. diam. Seeds faintly aromatic, with a bright pale brown very shining testa.—Hook. f. in Bot. Mag. t. 5761.

Upper Guinea. Akasa, at the mouth of the River Niger, *Simmonds!*

Lower Guinea. Gaboon River, *Mann*, 1034! Lower Congo, *Laurent*, 35.

10. **A. macrolepis,** *Schumann in Engl. Jahrb.* xv. 416. Leafy stem tall. Leaves lanceolate, acuminate, distinctly petioled on the sheath, cordate at the base, 16–18 in. long, 2 in. broad at the middle, glabrous on both surfaces; ligule large, membranous, cut down to the middle or beyond into two lobes. Inflorescence large, capitate; peduncle 4 in. long, covered from the base to the top with large bract leaves. Corolla-lobes 2 in. long; upper oblong, obtuse; lateral linear-lanceolate. Lip obovate-oblong, 2–$2\frac{1}{2}$ in. long and broad, crisped at the margin, fleshy in the middle; central lobe of anther-crest triangular; lateral lanceolate, falcate.

Upper Guinea. Cameroons: on the bank of a brook near Barombi, *Preuss*, 5.

No specimen in the Kew Herbarium.

11. **A. glaucophyllum,** *Schumann in Engl. Jahrb.* xv. 415. Leafy stem, tall. Leaves lanceolate, acuminate, above a foot long, $1\frac{1}{2}$ in. broad at the middle, glaucous-green, glabrous above, minutely pubescent beneath, narrowed gradually to the base; ligule small, truncate. Spikes 2-flowered, club-shaped; peduncle short; bracts ciliated on the margin. Dorsal corolla-lobe obovate, obtuse, nearly 3 in. long, 2 in. broad; lateral lanceolate. Lip obovate-cuneate, large, crisped, rose-red with a yellow throat; anther-crest with a subemarginate triangular central lobe and two spreading lanceolate side-lobes. Fruit and seeds unknown.

Upper Guinea. Cameroons: on the tobacco farm of Kriby, *Preuss*, 254.

No specimen in the Kew Herbarium.

12. **A. leptolepis,** *Schumann in Engl. Jahrb.* xv. 414. Rootstock slender, wide-creeping. Leafy stem 15–16 ft. long. Leaves lanceolate, moderately firm, acute, obscurely pubescent on the edge and lower surface, 1 ft. long, $1\frac{1}{2}$ in. broad at the middle, narrowed to the base, nearly sessile on the sheath; ligule small, truncate. Spikes oblong, 4–5-flowered, subsessile; bracts oblong, obtuse, membranous, glabrous, green at the flowering time, the upper $1\frac{1}{2}$ in. long. Flowers about 3 in. long. Upper corolla-lobe oblong, obtuse, 2 in. long; lateral lanceolate. Lip obovate-cuneate, 2 in. broad, much crisped, pale violet with a yellow throat; central lobe of the anther-crest triangular; lateral lanceolate, falcate. Fruit ampulliform, 1 in. diam. Seeds angled, $\frac{1}{6}$ in. diam.

Upper Guinea. Cameroons: in low forests north of Barombi, *Preuss*, 555!

13. **A. limbatum,** *Oliv. & Hanb. in Journ. Linn. Soc.* vii. 110. Rootstock slender, wide-creeping. Leafy stem, 12–15 ft. long. Leaves lanceolate, acuminate, firm in texture, 6–10 in. long, $1\frac{1}{4}$–$1\frac{1}{2}$ in. broad at the middle, glabrous above, obscurely pubescent beneath, narrowed to the base, nearly sessile on the sheath; ligule small. Peduncle short, 2–3-flowered; bracts oblong, obtuse, brown, scariose, upper above an inch long. Corolla-lobes 2 in. long; dorsal oblong; lateral lanceolate. Lip obovate-cuneate, purple, above 2 in. diam.; anther-crest with a small orbicular end-lobe and two spreading narrow side-lobes. Fruit glabrous. Seeds ellipsoid, lead-coloured, very shining.—Baker in Hook. Ic. t. 2480.

Upper Guinea. Fernando Po, *Mann*, 99! 1171!

14. **A. pilosum,** *Oliv. & Hanb. in Journ. Linn. Soc.* vii. 110. Rootstock stout, wide-creeping. Leafy stem robust, 6–8 ft. long. Leaves oblong-lanceolate, membranous, cuspidate, 10–12 in. long, 2–$2\frac{1}{2}$ in. broad at the middle, unequally cuneate at the base, clothed on both sides with short spreading hairs, nearly sessile on the sheath; ligule densely hairy. Scape very short, few-flowered; bracts oblong-navicular, acute, dark brown, hairy on the back, the upper $1\frac{1}{2}$ in. long. Corolla-lobes about 1 in. long. Lip yellow, obovate-cuneate, as long as the corolla-lobes; anther-crest with a small deltoid central-lobe and two lanceolate falcate side-lobes. Fruit and seeds unknown.—Baker in Hook. Ic. t. 2483.

Upper Guinea. Fernando Po, *Mann*, 1415!

15. **A. subsericeum,** *Oliv. & Hanb. in Journ. Linn. Soc.* vii. 110. Rootstock stout, wide-creeping. Leafy stem, 10–12 ft. long. Leaves oblong-lanceolate, acute, moderately firm, 1 ft. long, 2–$2\frac{1}{2}$ in. broad at the middle, glabrous above, finely pubescent all over beneath, narrowed gradually to the base, sessile on the sheath; ligule small. Peduncles short, 2–3-flowered; bracts oblong, obtuse, brown, scariose, the upper $1\frac{1}{2}$ in. long. Corolla-lobes 2 in. long; upper oblong; lateral lanceolate. Lip obovate-cuneate, 2 in. broad, bright-coloured, much crisped towards the edge; anther-crest with an orbicular central lobe and two falcate

lanceolate side-lobes. Fruit smooth, above 1 in. diam. Seeds ellipsoid, shining.—Baker in Hook. Ic. t. 2484.

Upper Guinea. Niger Territory: Old Calabar, *Milne*.

Lower Guinea. Gaboon: Muni River and Gaboon River, *Mann*, 1904!

16. **A. citratum,** *Pereira in Pharm. Journ. & Trans. ser.* 1, ix. 313, *with fig.* Rootstock stout, wide-creeping. Leafy stem stout, 10 ft. long. Leaves lorate-oblong, moderately firm, acute, glabrous, 1 ft. or more long, 2–3 in. broad at the middle, broadly rounded at the base, distinctly petioled above the sheath; ligule large, quadrate, scariose. Flowers many in a subsessile globose spike, 3 in. diam.; bracts suborbicular, obtuse, brown, scariose, the outer 2 in. broad. Upper corolla-lobe oblong, 3 in. long, 2 in. broad; lateral lanceolate. Lip obovate-cuneate, pale red, 3 in. long, 2 in. broad, much crisped; anther-cells pubescent; crest with a small round central lobe and two lanceolate ascending side-lobes. Fruit ovoid, glabrous, not grooved. Seeds obovoid, shining, angled by pressure.—Oliv. & Hanb. in Journ. Linn. Soc. vii. 110; Baker in Hook. Ic. t. 2478.

Lower Guinea. Gaboon: banks of the Gaboon River, *Mann*, 1052!

17. **A. angustifolium,** *Sonnerat, Voy. Ind.* iii. 276, *t.* 137. Rootstock stout, wide-creeping. Leafy stem reaching a length of 10–15 ft., 1 in. thick at the base. Leaves oblong-lanceolate, thin, glabrous, acute, the lower 1 ft. or more long, 3 in. broad, nearly sessile on the sheath; ligule large, quadrate, scariose. Flowers often several in a spike; peduncle sometimes 6–8 in. long; bracts obtuse, minutely apiculate, the upper oblong, $1\frac{1}{2}$ in. long. Flowers yellow or more or less tinged with red. Upper corolla-lobe oblong, $1\frac{1}{2}$ in. long; lateral lanceolate. Lip oblong-cuneate, about as large as the upper corolla-lobe, deflexed; anther-crest with a small rounded central lobe and two deflexed lanceolate side-lobes. Fruit ampulliform, bright red, glabrous, not grooved, 3–4 in. long, about 1 in. diam. Seeds oblong, large, pale-brown, glossy, not aromatic.—Roxb. Fl. Ind. i. 39; Horan. Prodr. 29; Hanb. in Journ. Linn. Soc. xiii. 154. *A. madagascariense*, Lam. Ill. i. 4, t. 2, fig. 1. *A. nemorosum*, Bojer, Hort. Maurit. 327. *A. Afzelii*, Hook. f. in Hook. Journ. Bot. iv. 129, t. 5. *A. Daniellii*, Hook. f. in Kew Journ. Bot. vi. 294; Bot. Mag. t. 4764; Baker, Fl. Maurit. 326. *A. Clusii*, Hanb. in Bot. Mag. t. 5250; Horan. Prodr. 29. *A. erythrocarpum*, Ridley in Journ. Bot. 1887, 130.

Upper Guinea. Sierra Leone: Sugarloaf Mountain, *Daniell*, 5! Fernando Po, *Daniell! Barter! Mann*, 1170!

Nile Land. British East Africa: Ruwenzori; Semliki Valley, *Scott-Elliot*, 7953! in streams at the foot of Ruwenzori, west side, *Scott-Elliot*, 8099!

Lower Guinea. Gaboon River, *Mann*, 1035! Island of St. Thomas, *Mann*, 1053! *Moller*, 8! *Welwitsch*, 6449! Princes Island, *Barter*, 1991! *Welwitsch*, 6455! Congo, *Smith!* Angola: Pungo Andongo; Mate de Pungo, *Welwitsch*, 6452! Golungo Alto; Sobato de Quilombo and Queta, *Welwitsch*, 6456! near Banza, *Welwitsch*, 6451! Malange, *Marques*, 26!

Mozamb. Dist. German East Africa: between the coast and Uyui, *Taylor!*

Also Mauritius and Madagascar. Sonnerat's type specimen from Madagascar, in the British Museum, has leaves not more than $1\frac{1}{2}$ in. broad.

18. **A. polyanthum,** *Schumann in Engl. Jahrb.* xv. 411. Leafy stem, tall. Leaves oblong-lanceolate, acuminate, 1 ft. or more long, 4–5 in. broad at the middle, densely softly pilose beneath, rounded to the base, distinctly petioled on the sheath; ligule small, truncate. Flowers several in a globose head on a peduncle $\frac{1}{2}$–1 ft. long, with large oblong obtuse scariose imbricate bract-leaves. Dorsal petal small, oblong. Lip oblong, purplish-yellow, 1 in. long; anther-crest with a triangular central-lobe and falcate lanceolate side-lobes. Fruit ampulliform, glabrous, not grooved.

Nile Land. British East Africa: Niamniam; at the rapids of the Linduku River, *Schweinfurth,* 3092! Diamvonu stream, *Schweinfurth,* 3262! 3312!

19. **A. cereum,** *Hook. f. in Kew Journ. Bot.* vi. 296. Leafy stem short, slender. Leaves lanceolate, firm, glabrous, reaching 1 ft. long, $1\frac{1}{2}$–2 in. broad at the middle, nearly sessile on the sheath, narrowed to the base; ligule small, truncate. Flowering-stem very slender, about $\frac{1}{2}$ ft. long, bearing a spike of 1–2 flowers; bracts brown, scariose, obtuse. Corolla-lobes $1\frac{1}{2}$ in. long; upper oblong, obtuse; lateral lanceolate. Lip pure white, obovate-cuneate, $1\frac{1}{2}$–2 in. broad; anther-crest with a small entire central lobe and two uncinate linear side-lobes. Fruit narrowly ampulliform, glabrous, not grooved, 2 in. long, crowned by the short calyx-tube. Seeds $\frac{1}{6}$ in. diam., grey, glossy, much angled by pressure.—Baker in Hook. Ic. t. 2477.

Upper Guinea. Sierra Leone, *Daniell!* Liberia: Cape Palmas, *Crummell!*

20. **A. zambesiacum,** *Baker.* Rootstock stout. Leafy stem 6 ft. long. Leaves oblong-lanceolate, moderately firm, 15–16 in. long, 4 in. broad at the middle, glabrous on both surfaces, distinctly petioled on the sheath. Flowers many in a dense head on a flexuose peduncle 1 ft. long, with many large oblong-navicular coriaceous brown bract-leaves; bracts of the capitulum ovate, acute, $1\frac{1}{2}$–2 in. long. Flowers seen only in an undeveloped state.

Mozamb. Dist. British Central Africa: Nyasaland; Mount Zomba, at the foot of the peak, 4500 ft., *Kirk!*

21. **A. Elliotii,** *Baker.* Leaves oblong, membranous, 1 ft. long. 3–4 in. broad at the middle, glabrous above, softly hairy beneath, rounded to the base, distinctly petioled above the sheath; sheaths densely hairy; ligule moderately large, truncate. Flowers many in a globose head on a peduncle 9–10 in. long, hidden by large oblong imbricate obtuse brown scariose bract-leaves; outer bracts ovate, acute, 2–3 in. long. Young fruit ampulliform, glabrous, 2–3 in. long, under 1 in. diam., not grooved vertically. Corolla and lip not seen.

Upper Guinea. Sierra Leone: Herimankuna, in shady woods, *Scott-Elliot,* 5249!

22. **A. longiscapum,** *Hook. f. in Kew Journ. Bot.* vi. 296. Leafy stem 4–8 ft. long. Leaves oblong-lanceolate, acute, moderately firm, glabrous, 1 ft. long, 2–2½ in. broad, quite sessile on the leafy sheath, with the base shortly cordate on each side; ligule very short, Peduncle firm, slender, reaching a length of 2 ft., bearing 1–4 spikes, the side ones on long peduncles. Bracts oblong, obtuse, 1½ in. long, spotted with claret-purple on a pale green ground. Corolla-lobes 2 in. long; upper oblong, obtuse; lateral lanceolate. Lip obovate-cuneate, 1½ in. broad, much crisped towards the margin; anther-crest not seen. Fruit ampulliform, glabrous, not grooved, 2½–3 in. long. Immature seeds obovoid, with a papery aril.—Baker in Hook. Ic. t. 2481.

Upper Guinea. Sierra Leone: Regent, *Daniell*, 3!

23. **A. giganteum,** *Oliv. & Hanb. in Journ. Linn. Soc.* vii. 109. Leafy stem reaching a length of 15–20 ft. Leaves oblong or oblong-lanceolate, reaching a length of 2 ft. and a breadth of 6–7 in., acute, moderately firm, glabrous, rounded at the base, shortly petioled above the sheath; ligule large, truncate. Flowering stem robust, produced above the ground to a length of 2 ft., bearing towards the base many large oblong-complicate bract-leaves and upwards many distichous sessile erecto-patent spikes containing several flowers each. Corolla-lobes above 2 in. long; upper oblong, 18–21 lin. broad; lateral lanceolate. Lip obovate-cuneate, 3 in. long, 2 in. broad, much plaited; anther-crest with a large emarginate central lobe and 2 small ascending linear side-lobes. Fruit ovoid, glabrous, not sulcate, 3 in. long. Seeds small, ellipsoid, shining.—Baker in Hook. Ic. t. 2479.

Lower Guinea. Gaboon: banks of the Muni and Gaboon Rivers, *Mann*, 1051!

24. **A. luteo-album,** *Schumann in Engl. Jahrb.* xv. 413. Rootstock stout. Leaves hairy on the veins beneath. Inflorescence simple, clavate, on a peduncle ½ ft. long, or branched on a stem above 1 ft. long. Corolla-lobes an inch or more long; dorsal oblong, concave, acute; lateral linear-lanceolate, very acuminate. Lip obovate-cuneate, 1½ in. broad, white with a yellow middle; anther-crest with a triangular central lobe and two rather large recurved lateral lobes.

Nile Land. British East Africa: Niamniam; near the village of Wando on the Dyagbe River, *Schweinfurth.*

No specimen in the Kew Herbarium.

25. **A. sanguineum,** *Schumann in Engl. Jahrb.* xv. 412. Rootstock stout, wide-creeping. Leafy stem 15 ft. long. Leaves oblong-lanceolate, 1–1½ ft. long, 4–5 in. broad at the middle, pubescent beneath, nearly or quite sessile on the sheath; ligule obliquely truncate. Inflorescence globose, on a simple peduncle nearly 1 ft. long, which is hidden by the large brown scariose imbricated bracts or compound on a long stem. Dorsal corolla-lobe oblong-navicular, bright red, 1½ in. long; lateral linear-lanceolate. Lip oblong, pale yellow, 1½ in. long, ½ in. broad; anther-crest with a large ovate terminal lobe and two

falcate lanceolate side-lobes. Fruit ampulliform, smooth, glabrous, not grooved, 3 in. long, 1 in. diam.

Nile Land. British East Africa: Niamniam; Nabambisso River (in woods along the Boddo, near Sabbi, ex *Schumann*), *Schweinfurth*, 3022! Assika River, *Schweinfurth*, 3310! Nabanda Yuru, *Schweinfurth*, 3335!

Imperfectly known Species.

A. macrospermum, *Smith in Rees, Cyclop.* xxxix. *No.* 3; **A. Clusii,** *Smith, loc. cit., No.* 4; *and* **A. strobilaceum,** *Smith, loc. cit., No.* 8, are described from such incomplete material (fruit and seed only) that it is impossible to identify them with certainty.

A. crassilabium, *Schumann in Engl. Pfl. Ost-Afr. C.* 149. Leaves 8–10 in. long. 1½–2 in. broad, broadest above the middle, glabrous, shortly petioled; ligule nearly 1 in. long. Flowers yellow.

Mozamb. Dist. German East Africa: Usambara, 3000–3500 ft., *Holst*, 4240.

No specimen in the Kew Herbarium.

A. Mala, *Schumann in Engl. Pfl. Ost-Afr. C.* 149. Leaves oblong, moderately firm, 1–1½ ft. long, 4–5 in. broad at the middle, glabrous on both sides, deltoid at the base, shortly petioled above the sheath; ligule large, truncate. Flowers 3–3½ in. long, golden yellow. Fruit fusiform, eatable.

Mozamb. Dist. German East Africa: Usambara; Mlalo, *Holst*, 2459! 3740.

A. Korarima, *Pereira, Mat. Med. edit.* 3, 1136, *figs.* 245–247. Fruit ampulliform, narrowed gradually to the apex, 2 in. long, 1 in. diam., flattened on one side, glabrous, not vertically grooved. Seed rather larger than in *A. Melegueta*, globose or somewhat angled, olive-brown, with an aromatic taste.—Kew Bulletin, 1894, 400.

Nile Land. "Brought to the market of Baso, in Southern Abyssinia, from Tumhe, somewhere about 9° N. lat. and 35° (36½°) E. long. Carried down to Massowa, and thence exported to India" (*Pereira*).

There are specimens in the Kew Museum received from Bombay and Aden, and directly from Abyssinia from the Countess of Mayo.

5. **RENEALMIA,** Linn. f.; Benth. et Hook. f. Gen. Pl. iii. 648.

Calyx firm in texture, narrowly or broadly funnel-shaped, 3-toothed at the apex. Corolla-tube as long as the calyx; lobes subequal, oblong-lanceolate. Lateral staminodia rudimentary; lip a little longer than the corolla-lobes; fertile anther 2-celled, not crested; filament narrow. Ovary cylindrical, 3-celled; ovules many in a cell; style long, filiform; stigma turbinate. Capsule globose, rather fleshy, finally dehiscing irregularly. Seeds few, subglobose, arillate; testa much intruded; embryo straight.—Rootstock fleshy, sending out cylindrical

root fibres. Leafy stems in all the African species but one distinct from the flowering stems. Inflorescence a narrow thyrsoid panicle; bracts membranous, often enclosing the bracts.

Species 15–20, all the others Tropical American.

Panicle distinct from the leafy stem.
  Panicle 2–3 in. long.
    Pedicels as long as the ovary . . . . . 1. *R. africana.*
    Pedicels very short . . . . . 2. *R. Mannii.*
  Panicle 1 ft. long.
    Panicle very narrow . . . . . 3. *R. cincinnata.*
    Panicle 4 in. broad . . . . . 4. *R. grandiflora.*
Panicle terminal on the leafy stem . . . . 5. *R. battenbergiana.*

1. **R. africana,** *Benth. ex Hook. f. in Hook. Ic. t.* 1430. Rootstock as thick as a man's finger, fleshy, wide-creeping, sending out cylindrical fibres. Leafy stem 4–5 ft. long. Leaves oblanceolate-oblong, 1 ft. or more long, 2–4 in. broad, acute, narrowed gradually to the base, moderately firm, glabrous on both sides; petiole 1–2 in. long. Flowering stems many from the rootstocks, distinct from the leafy stem; panicle lax, thyrsoid, slightly compound, 3–4 in. long; peduncle 4–6 in. long, with many scariose sheaths; bracts oblong, obtuse, pale red, $\frac{1}{2}$–$\frac{3}{4}$ in. long; lower flowers about 3 to a branch, on short erecto-patent pedicels. Calyx funnel-shaped, $\frac{1}{4}$–$\frac{1}{3}$ in. long, finally bright orange-yellow, shortly toothed at the apex. Corolla-tube not exserted from the calyx; lobes oblong, $\frac{1}{4}$ in. long, the upper spoon-shaped. Lip ovate-cuneate, flat, $\frac{3}{4}$ in. long, under $\frac{1}{2}$ in. broad, with a narrow claw as long as the blade, with a tooth on each side representing a lateral staminode; fertile stamen shorter than the corolla-lobes. Fruit small, oblong, dull cinnamon-coloured. Seeds deliciously aromatic, covered with the red filaments of the aril.—Ridley in Journ. Bot. 1887, 132.

Upper Guinea. Cameroons: upper mountain slopes, in forest, 5000 ft., *Johnston*, 106! Efulen, in forest, *Bates*, 301! 408! Fernando Po, *Mann*, 323!

Lower Guinea. Corisco Bay, *Mann*, 1905! Gaboon; Mfoa, *Bates*, 543! Angola: Golungo Alto; in woods at Sobato de Quilombo, Quiacatubia, and Mata de Quisculo, *Welwitsch*, 6442!

2. **R. Mannii,** *Hook. f. in Hook. Ic. sub t.* 1430. Rootstock short, stout, fleshy, sending out many cylindrical fibres. Leafy stem short. Leaves few, oblong, cuspidate, cuneate at the base, 6–9 in. long, $2\frac{1}{2}$–3 in. broad at the middle, moderately firm, glabrous on both sides; petiole 2–3 in. long. Raceme moderately dense, 2–3 in. long, shortly peduncled; lower nodes 2–3-flowered; pedicels very short; bracts orbicular, persistent, finally pale and chartaceous, wrapped quite round the ovary and calyx, the lower $\frac{1}{2}$ in. long and broad. Calyx finally almost campanulate, $\frac{1}{4}$ in. long, obscurely toothed. Corolla and stamens not seen.

Upper Guinea. Fernando Po, *Mann*, 1172!

3. **R. cincinnata,** *Baker.* Rootstock not seen. Leaves few, erect near the top of a short slender stem, lanceolate, acuminate, narrowed

to the base, about 1 ft. long, 1½–2 in. broad, moderately firm, glabrous on both sides; petiole slender, 1½–3 in. long. Peduncle 1½ ft. long, with several long scariose obtuse sheaths, produced direct from the rootstock. Panicle lax, very narrow, 1 ft. long; rhachis pubescent; lower flowers geminate; pedicels short, ascending; bracts oblong, pubescent, ½–¾ in. long. Calyx narrowly funnel-shaped, ⅙ in. long, obscurely toothed. Corolla-tube cylindrical, rather longer than the calyx; lobes small, oblong-lanceolate. Lip not seen. Fruit oblong, ⅓ in. long.—*Ethanium cincinnatum*, K. Schum. in Engl. Jahrb. xv. 424.

Lower Guinea. Gaboon: Munda; Sibange farm, *Soyaux*, 180!

4. **R. grandiflora,** *Baker.* Leaf oblong, acute, deltoid at the base, 2–3 ft. long, 6–7 in. broad at the middle, moderately firm, glabrous on both sides. Panicle dense, thyrsoid, 1 ft. long, 4 in. broad; branches spreading horizontally, the lower 2–3-flowered; pedicels ascending, ⅓–½ in. long, densely pubescent; flower-bracts oblong-navicular, above 1 in. long, enclosing the buds. Corolla 1½–2 in. long; lobes oblong-lanceolate, longer than the tube. Lip scarcely longer than the corolla-lobes.

Lower Guinea. Island of St. Thomas: Angolares, *Quintas*, 2!

5. **R. battenbergiana,** *Cummins.* Leafy stem 2–4 ft. long. Leaves oblanceolate-oblong, cuspidate, 6–8 in. long, 1½–2 in. broad above the middle, narrowed to the base, firm, glabrous, with a petiole an inch long above the clasping sheath. Raceme simple, lax, few-flowered, terminal on the leafy stem; bracts oblong, similar in texture to the leaves, ¾–1 in. long. Calyx funnel-shaped, ¼ in. long. Corolla not seen. Capsule oblong-cylindrical, indehiscent, ¾ in. long, red.

Upper Guinea. Ashanti: Assin-Yan-Coomassie, *Cummins*, 197!

6. **THALIA,** Linn.; Benth. et Hook. f. Gen. Pl. iii. 650.

Sepals 3, equal, free, ovate, membranous. Petals 3, free or slightly joined at the base; posterior rather larger than the two others. Andrœcium with a short tube; lobes very irregular; lip obovate, with a crest inside; anther 1-celled on a narrow lobe. Ovary globose, with only one perfect cell, containing a single erect ovule; style adnate at the base to the staminal tube; stigma thick, appendiculate at the back. Capsule globose; pericarp thin, smooth, breaking irregularly. Seeds solitary, globose, arillate; embryo horseshoe-shaped.—Annual herbs, without any thickened rootstock. Leaves basal and also cauline, with long petioles above the sheaths. Inflorescence a lax panicle, with secund laxly spicate branches, the small flowers in pairs enclosed in a pair of complicate bracts

Species about 8, the others American.

Leaf 1 in. broad	1. *T. cærulea.*
Leaf about 3 in. broad	2. *T. Welwitschii.*
Leaf 4–6 in. broad	3. *T. geniculata.*

1. **T. cœrulea,** *Ridley in Journ. Bot.* 1887, 132. Root-leaves lanceolate-acuminate, 10 in. long, an inch broad, with a long broad sheathing petiole. Stems slender, 5–7 ft. long. Panicle lax, with few branches, $\frac{1}{2}$ ft. long; lower branch-bracts not leafy; branchlets flexuose; outer flower-bract grey-violet, ovate-lanceolate, $\frac{1}{2}$ in. long; inner ovate, obtuse. Flowers blue. Sepals ovate, obtuse. Dorsal petal lorate, obtuse, $\frac{3}{4}$ in. long, much larger than the two others. Staminiferous lobe of the androecium lanceolate, obtuse; lip lanceolate, from a triangular base. Seed oblong, $\frac{1}{4}$ in. long.

Lower Guinea. Angola: Pungo Andongo; in marshes by the River Cuanza, *Welwitsch*, 6444!

No specimen in the Kew Herbarium.

2. **T. Welwitschii,** *Ridley in Journ. Bot.* 1887, 132. Root-leaves ovate, glaucous, 9 in. long, 3 in. broad, with a petiole 1 ft. long, sheathing the stem in the lower part. Stem 3–5 ft. long. Panicle lax, leafless, not very compound; final branchlets slightly flexuose, 2 in. long; outer flower-bract subacute, $\frac{5}{8}$ in. long; inner rather longer, oblong, acute. Flowers purple. Sepals ovate, obtuse. Dorsal petal ligulate, obtuse; lateral shorter, lanceolate, obtuse. Staminiferous lobe of the androecium cuneate; anther with a long stipes. Fruit globose.

Lower Guinea. Angola: Cazengo; rather rare in damp places between Cacula and Dalatanda, *Welwitsch*, 6443! Pungo Andongo; in marshes in the woods of Mutollo, *Welwitsch*, 6445!

No specimen in the Kew Herbarium.

3. **T. geniculata,** *Linn. Sp. Pl. ed.* ii. 3. Whole plant 5–6 ft. high. Root-leaves with long petioles, sheathing the lower part of the stem; blade ovate or oblong, acute, rounded at the base, moderately firm, glabrous, very variable in size, often 1 ft. long, 4–6 in. broad; petiole with a glabrous cylindrical callus at the apex, $\frac{1}{2}$–1 in. long. Panicle very large and lax; lower branches often subtended by reduced leaves; rhachis very flexuose; flower-bracts oblong, scariose, glabrous or hairy, $\frac{1}{2}$–1 in. long. Flowers in pairs reaching to the tip of the bract, shortly pedicellate. Calyx very small. Petals oblong, obtuse. Staminodia usually obovate, violet, much longer than the petals. Capsule obovoid, $\frac{1}{4}$ in. long.—Rosc. Scit. t. 45; Horan. Prodr. 10; Peters. in Mart. Fl. Bras. III. iii. 142, t. 38, fig. 2. *Maranta geniculata,* Lam. Illust. i. 9.

Upper Guinea. Senegambia, *Heudelot*, 665! Sierra Leone: in rice fields about Mahela, *Scott-Elliot*, 4054! Falaba, *Scott-Elliot*, 5098! Dahomey: Godome, *Newton*, 16! Lagos: Yoruba; Abeokuta, *Irving*, 152! 158! and without precise locality, *Moloney! Millen!* Niger Territory: Nupe, *Barter*, 1024! Hausa, *Krause!* Cameroons: Yaunde, *Zenker & Staudt*, 198! 608!

Nile Land. British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 1791! Niamniam; Gumango Hill, *Schweinfurth*, 2873!

Also through Tropical America from Florida to Brazil.

7. **DONAX**, Lour.; Schumann in Engl. Jahrb. xv. 434.

Sepals 3, free, linear-oblong, equal, scariose, persistent. Petals 3, convolute, spreading at the tip. Staminodia united in a tube at the base; lobes petaloid, very irregular. Lip obovate, keeled inside; staminiferous lobe narrow, with the 1-celled anther adnate to it on one side. Ovary 3-celled; cells 1-ovuled; style adnate below to the staminal tube, involute. Stigma dilated. Fruit indehiscent, globose or compressed, 1–3-seeded. Seeds subglobose, with an aril and a horseshoe-shaped embryo.—Rhizome tuberous or woody. Stems long, slender, erect, leafy, branched. Leaves oblong, cuspidate, with a long sheath and short free petiole. Flowers in lax terminal panicles, small, fugitive, white, yellow or blue; bracts cylindrical, not usually imbricated.—*Clinogyne*, Salisb.; Benth. et Hook. f. Gen. Pl. iii. 651.

Species about twelve, the others in Tropical Asia.

Flowers comparatively large.
- Bracts not imbricated . . . . . 1. *D. cuspidata.*
- Bracts imbricated . . . . . 2. *D. arillata.*

Flowers comparatively small.
- Pairs of flowers single . . . . . 3. *D. azurea.*
- Pairs of flowers many to a branch.
  - Fruit lobed, 3-seeded . . . . . 4. *D. filipes.*
  - Fruit globose, usually 2-seeded.
    - Leaves small.
      - Fruit glabrous . . . . . 5. *D. oligantha.*
      - Fruit pubescent . . . . . 6. *D. congensis.*
    - Leaves large.
      - Bracts glabrous.
        - Free tip of petiole $\frac{1}{3}$–$\frac{1}{2}$ in. long . . . 7. *D. ugandensis.*
        - Free tip of petiole 1 in. long . . . 8. *D. leucantha.*
      - Bracts pubescent . . . . . 9. *D. purpurea.*

1. **D. cuspidata,** *Schumann in Engl. Jahrb.* xv. 440. Stems glabrous, stramineous, reaching a length of 10–12 ft.; nodes pubescent. Leaves oblong, conspicuously cuspidate, reaching a length of 1 ft. or more and a breadth of 5–6 in., moderately firm, glabrous, rounded at the base, variegated with pinnate streaks of white; lower sheaths $\frac{1}{2}$ ft. or more long; free thickened apex of petiole $\frac{3}{4}$–1 in. long. Inflorescence copiously panicled; sheaths cylindrical, glabrous, $1\frac{1}{2}$ in. long. Flowers in pairs, one on a long pedicel. Ovary densely silky. Sepals oblong-lanceolate, $\frac{1}{3}$ in. long. Staminodia obovate, deep purple or yellow, twice as long as the calyx. Fruit globose, often 3-seeded.—*Maranta cuspidata*, Rosc. Scit. t. 31; *Donax schweinfurthiana*, Schumann in Engl. Jahrb. xv. 437; *Arundastrum schweinfurthianum*, Kuntze, Revis. Gen. 684.

Upper Guinea. Sierra Leone: Heddle's Farm, *Scott-Elliot*, 3900! Duunia, in shady woods, *Scott-Elliot*, 4820! Nienia, in woods. *Scott-Elliot*, 4902! Bagru River, *Mann*, 901! Ashanti: Assin-Yan-Coomassie, *Cummins*, 210! 239! Gold Coast: Basin of the River Volta; between Maikera and Bame, *Krause!* between

Agruafi and Bame, *Krause!* Lagos: Abeokuta, *Barter*, 3372! Niger Delta: Angiama, *Barter*, 98! Cameroons: Yaunde, *Zenker & Staudt*, 114! bank of Elephant Lake, *Preuss*, 386! thickets by the landing-place near Barombi-ba-Mbu, *Preuss*, 424, 425.

Nile Land. Jur: Jur Ghattas, *Schweinfurth.* Niamniam: Dyagbe River, *Schweinfurth*, 3103!

Lower Guinea. Gahoon: Corisco Bay, *Mann*, 1906! Mfoa, *Bates*, 544! Lower Congo: Mayombe, *Laurent*, 64.

2. **D. arillata,** *Schumann in Engl. Jahrb.* xv. 438. Stem stramineous, flattened, 6 ft. long, glabrous, except the hairy nodes. Leaves oblong, glabrous, moderately firm, 4–10 in. long, 3–4 in. broad, not variegated, rounded at the base; sheaths glabrous, 4–5 in. long; thickened free tip of petiole cylindrical, under 1 in. long. Inflorescence long-peduncled, erect, scantily forked; sheaths glabrous, cylindrical, imbricated so as to nearly hide the axis, $1\frac{1}{2}$–2 in. long. Flowers in pairs, one subsessile, the other pedicellate. Ovary densely silky. Sepals lanceolate, $\frac{1}{3}$–$\frac{1}{2}$ in. long. Outer staminodia obovate, twice as long as the calyx. Fruit pilose, globose, apparently 1-seeded.

Upper Guinea. Cameroons: Barombi stream, near Kake, *Preuss*, 379!

3. **D. azurea,** *Schumann in Engl. Jahrb.* xv. 434. Stems tufted. Lower leaves reduced to mere sheaths. Leaves oblong, glabrous on both sides, 4–8 in. long, 2–3 in. broad; cusp linear, very acute; sheaths very long, sparsely pilose inside near the apex. Bracts 2-flowered, an inch or more long. Ovary pilose. Sepals unequal, lanceolate, $\frac{1}{5}$–$\frac{1}{4}$ in. long. Outer staminodia bright azure-blue, obovate-cuneate, nearly an inch long. Fruit unknown.

Nile Land. British East Africa: Niamniam; by the Dyagbe River, near Wando's village, *Schweinfurth*, 3216.

No specimen in the Kew Herbarium.

4. **D. filipes,** *Schumann in Engl. Jahrb.* xv. 440. Stems slender, glabrous, 4 ft. long; nodes also glabrous. Leaves ovate-oblong, conspicuously cuspidate, 3–6 in. long, 2–3 in. broad, glabrous on both sides, rounded at the base, variegated with pinnate white bands; sheaths glabrous, 2–5 in. long; thickened free apex of petiole not above $\frac{1}{6}$ in. long. Inflorescence sparsely or copiously panicled; sheaths glabrous, cylindrical, 1 in. long; flowers in pairs, one nearly sessile, one pedicellate. Ovary dense, pubescent. Sepals lanceolate, $\frac{1}{8}$ in. long. Staminodia golden-yellow, twice as long as the calyx. Fruit small, 3-lobed, 3-seeded.—*Phrynium filipes*, Benth. in Hook. Niger Fl. 532; Horan. Prodr. 11. *Clinogyne filipes*, Benth. Gen. Pl. iii. 651.

Upper Guinea. Lagos: banks of the River Ogun, *Millen*, 141! Western Lagos, *Rowland!* Cameroons: Efulen, *Bates*, 441! Fernando Po, *Vogel*, 163!

5. **D. oligantha,** *Schumann in Engl. Jahrb.* xv. 435. Stems glabrous, 5–6 ft. long; nodes also glabrous. Leaves ovate-oblong, conspicuously cuspidate, 3–4 in. long, $1\frac{1}{2}$–2 in. broad, unequally rounded

at the base, glabrous on both sides; sheaths glabrous, the lower 3–4 in. long; thickened free apex of petiole, $\frac{1}{4}$ in. long. Inflorescence of two branches subtended at the base by large leaves; sheaths cylindrical, glabrous, $\frac{3}{4}$ in. long; flowers in pairs, one nearly sessile, the other pedicellate. Ovary silky. Sepals lanceolate, $\frac{1}{6}$ in. long. Outer staminodia obovate, twice as long as the calyx. Fruit globose, shining, 2-seeded, glabrous, $\frac{1}{4}$ in. diam.

Lower Guinea. Gaboon: Munda, Sibange Farm, margin of the forest, *Soyaux*, 241!

6. **D. congensis,** *Schumann in Engl. Jahrb.* xv. 439. Stems tall, suffruticose, glabrous, terete or flattened. Leaves oblique-oblong, glabrous on both sides, 2–5 in. long, 1–2 in. broad; cusp subulate, rather eccentric; sheaths glabrous except the ciliate apex; thickened free petiole pubescent on the face. Inflorescence little branched, terminal, subtended at the base by a large leaf; bracts above $\frac{1}{2}$ in. long. Flowers small, yellow. Ovary silky. Sepals lanceolate-oblong, acute, $\frac{1}{6}$–$\frac{1}{5}$ in. long. Petals oblong, acute. Outer staminode oblong, acute. Fruit pubescent, oblique, 2-seeded.

Lower Guinea. Lower Congo: Msuata, *Buettner*, 547; forest at Zenze, *Laurent*.

South Central. Lunda: Bashilange; Mukenge, in forest, *Pogge*, 1451.

No specimen in the Kew Herbarium.

7. **D. ugandensis,** *Schumann in Engl. Pfl. Ost-Afr. C.* 150. Stems moderately stout. Leaves oblong, grey-green, 4–6 in. long, 2–3$\frac{1}{2}$ in. broad above the base; cusp eccentric; nodes and sheaths glabrous; the latter 4–5 in. long; free petiole $\frac{1}{3}$–$\frac{1}{2}$ in. long. Branches of the panicle $\frac{1}{2}$ ft. long; peduncles and pedicels moderately stout; bracts cylindrical, glabrous, 1$\frac{1}{4}$ in. long. Flowers $\frac{1}{3}$ in. long. Ovary silky. Fruit globose, 2-seeded.

Nile Land. British East Africa: Uganda; Kampala, *Scott-Elliot*, 7390! Manyonyo, *Stuhlmann*, 1390.

Mozamb. Dist. German East Africa: Karagwe; Ihangiro, *Stuhlmann*, 896!

8. **D. leucantha,** *Schumann in Engl. Jahrb.* xv. 436. Stem 9–12 ft. long, stramineous, glabrous, except the nodes, which are finely pubescent. Leaves oblong, moderately firm, glabrous, 4–8 in. long, 2–3 in. broad, rounded at the base, not variegated; cusp $\frac{1}{2}$–1 in. long, very eccentric; sheaths glabrous, 2–4 in. long; thickened free tip of petiole under 1 in. long. Inflorescence copiously panicled, erect; lower branches subtended by large leaves; sheaths cylindrical, glabrous, 1–1$\frac{1}{2}$ in. long; flowers in pairs, whitish, one nearly sessile, the other on a long pedicel. Ovary densely hairy. Sepals lanceolate, $\frac{1}{8}$ in. long. Outer staminodia obovate, twice as long as the calyx. Fruit globose, glabrous, $\frac{1}{4}$ in. diam., usually 2-seeded.

Upper Guinea. Cameroons: near Barombi, *Preuss*, 354! North bank of Elephant Lake, *Preuss*, 495!

9. **D. purpurea,** *Schumann in Engl. Jahrb.* XV. 440. Stems slender, many from one rhizome, 2–3 ft. long. Leaves ovate or ovate-oblong, $\frac{1}{2}$–$1\frac{1}{2}$ in. long, 6–8 in. broad, glaucous-green above, pinnately variegated with streaks of white. Panicle erect, with slender spreading hispid branches; bracts oblong-lanceolate, pubescent, $1\frac{1}{2}$–$1\frac{3}{4}$ in. long. Flowers small, blue-purple. Sepals lanceolate, obtuse, $\frac{1}{6}$ in. long. Petals lorate, obtuse, longer than the staminodia. Lip small, narrow. Style longer than the staminodia. Fruit globose, hispid, $\frac{1}{4}$ in. long, shining, scarlet, usually 2-seeded.—*Clinogyne purpurea*, Ridley in Journ. Bot. 1887, 132.

Lower Guinea. Angola: Golungo Alto; common in woods by streams, 2000–2500 ft., *Welwitsch*, 6440!

No specimen in the Kew Herbarium.

8. **TRACHYPHRYNIUM**, Benth.; Benth. et Hook. f. Gen. Pl. iii. 651.

Sepals free, lanceolate, scariose, strongly nerved. Petals united in a tube in the lower half; blade oblong, spreading. Staminodia united in a tube at the base; outer lobes obovate; lip broad, obliquely crested on the face; staminiferous lobe narrowed, with the 1-celled anther adnate to one side. Ovary globose, papillose, 3-celled; cells 1-ovuled; style adnate at the base to the staminal tube, involute, appendiculate on the back below the inflexed 2-lobed stigma. Capsule 3-celled or by abortion 2-celled, 2–3-valved, strongly muricated. Seed solitary, globose or oblong, with a basal aril and horseshoe-shaped embryo.—Tall sarmentose branching shrubs, with leafy stems. Inflorescence terminal, simple or branched; rhachis jointed; internodes short; bracts usually deciduous. Flowers small, inconspicuous.

Endemic.

Valves of fruit acutely angled on the back	1. *T. preussianum.*
Valves of fruit rounded on the back.	
Branches spinous	2. *T. danckelmannianum.*
Branches unarmed.	
Capsule $\frac{1}{2}$ in. diam	3. *T. braunianum.*
Capsule $1\frac{1}{2}$–2 in. diam.	
Bracts 1 in. long	4. *T. violaceum.*
Bracts $1\frac{1}{2}$ in. long.	5. *T. poggeanum.*

1. **T. preussianum,** *Schumann in Engl. Jahrb.* XV. 429, *fig. N*, 430. Stem tall, woody, shining, stramineous, unarmed; branchlets often abruptly deflexed. Leaves oblong, cuspidate, moderately firm, glabrous, rounded at the base, 5–6 in. long, 2–$2\frac{1}{2}$ in. broad; sheaths glabrous, 3–4 in. long; thickened free apex of petiole $\frac{1}{2}$–$\frac{3}{4}$ in. long. Inflorescence compound; rhachis glabrous, slightly flexuose; internodes $\frac{1}{4}$ in. long; bracts oblong-lanceolate, 1–$1\frac{1}{2}$ in. long. Flowers white or reddish, an inch long. Sepals ovate, acuminate, $\frac{1}{2}$ in. long. Petals ovate,

acuminate, pilose, connate in the lower half. Outer staminodia obovate, obtuse. Capsule trigonous, densely echinate, 2 in. diam.; valves acutely keeled. Seeds globose.

Upper Guinea. Cameroons: near Barombi, *Preuss*, 32, 321! 340; low forest between Barombi and Kumba, *Preuss*, 60; forest north-west of Makonje, *Preuss*, 78; between Kumba-Nenga and Mambanga, *Preuss*, 144!

Lower Guinea. Gaboon: Munda; Sibange Forest, *Buettner*, 541, 544.

2. **T. danckelmannianum,** *J. Braun & Schumann in Mitth. Deutsch. Schultzgeb.* ii. (1889) 153. Branchlets woody, terete, stramineous, armed with small hooked spines. Leaves oblong, acute, firm, glabrous, 3–5 in. long, 1½–2 in. broad, rounded at the base; sheaths glabrous, 2–3 in. long; thickened free apex of the petiole ½ in. long. Inflorescence simple, with a very flexuose rhachis and very short internodes; bracts orbicular, erecto-patent, glabrous, ¾ in. long and broad. Ovary densely hairy. Flower ½ in. long. Sepals small, lanceolate. Corolla-tube longer than the sepals. Fruit densely echinate, 2 in. diam.; valves rounded on the back.—Schumann in Engl. Jahrb. xv. 429, figs. L, M, 432.

Upper Guinea. Cameroons: common in woods, *Braun!* near Bipinde in forest, *Zenker*, 929! near Barombi, *Preuss*, 255! 407! Yaunde, *Zenker & Staudt*, 610!

Lower Guinea. Gaboon: Munda; Sibange Farm, *Soyaux*, 85!

3. **T. braunianum,** *Baker.* A tall shrub, with terete, woody, stramineous, unarmed, sarmentose branchlets. Leaves firm, glabrous, oblong, cuspidate, 3–6 in. long, 1½–3 in. broad, rounded at the base; sheaths glabrous, 2–4 in. long; free thickened apex of the petiole ¼ in. long. Inflorescence simple, spreading from the tip of the stem; rhachis pubescent, flexuose; internodes about ¼ in. long; bracts oblong-lanceolate, ¾–1 in. long. Flowers in pairs, whitish, 1 in. long. Sepals lanceolate, pubescent, ½ in. long. Outer staminodia obovate, twice as long as the sepals. Capsule subglobose, densely muricate, ½ in. diam. Seed subglobose, brown, ¼ in. diam., with a large basal aril.—*Hybophrynium braunianum*, Schumann in Engl. Jahrb. xv. 428, 429, figs. A, F, H, K.

Upper Guinea. Sierra Leone: in a ravine near Mount Leicester, *Barter!* near Wilberforce, *Johnston!* woods near Kambia, *Scott-Elliot*, 4508! near Kafogo, *Scott-Elliot*, 4464! Duunia, *Scott-Elliot*, 4884! and without precise locality, *Afzelius! Don!* Gold Coast, *Burton & Cameron!* Lagos, *Moloney!* Yoruba, *Moloney!* Western Lagos, *Rowland!* Niger Delta: Abo (Ibu), *Vogel*, 13! Lower Niger: Onitsa, *Barter*, 1784! Old Calabar, *Thomson*, 108! Cameroons: Cameroon River, *Mann*, 2146! Batanga; near Lobe River, Bates, 201! on the Tobacco Farm of Kriby, in low forest, *Preuss*, 256.

Nile Land. British East Africa: Niamniam; Atasilli Brook, *Schweinfurth*, 3061! Mbrwole River, *Schweinfurth*, 3085! Nabambisso River, *Schweinfurth*, 2934, 3044, 3713.

Lower Guinea. Corisco Bay, *Mann*, 1909! Lower Congo: Stanley pool, *Callewaert!* left bank of the Congo below Kobaka, *Buettner*, 546!

4. **T. violaceum,** *Ridley in Journ. Bot.* 1887, 133. Stem tall, woody, sarmentose; branches unarmed. Leaves papyraceous, ovate-oblong, cuspidate, glaucous-green, reaching 8 in. long, 3 in. broad, rounded or subcordate at the base; sheath 4 in. long; free thickened apex of petiole 1 in. long. Inflorescence branched; branches abruptly flexuose, 5–6 in. long; bracts oblong, 1 in. long. Flowers violet-purple. Sepals lanceolate, ½ in. long. Petals lanceolate, acuminate, connate in the lower half, longer than the staminodia. Capsule densely muricate, 1½ in. diam. Seeds subglobose.

Lower Guinea. Angola: Pungo Andongo; Mutollo, in woods, and within the fortifications in Barrancos de Catete, *Welwitsch,* 6441! Golungo Alto: woods of Sobati Galanga, *Welwitsch,* 6441B!

No specimen in the Kew Herbarium.

5. **T. poggeanum,** *Schumann in Engl. Jahrb.* xv. 429, *figs. B–E,* 431. A shrub 10–15 ft. high, with unarmed sarmentose branches and often geniculate branchlets. Leaves oblong, cuspidate, moderately firm, glabrous, 6–8 in. long, about 3 in. broad, rounded at the base; sheaths 5–6 in. long; thickened apex of the petiole very short. Inflorescence branched; rhachis flexuose; internodes about ¼ in. long; bracts oblong-lanceolate, 1½ in. long. Flowers purple. Sepals acuminate, glabrous, ½ in. long. Staminodia twice as long as the calyx. Capsule 2–3-lobed, densely echinate, 1½–2 in. diam.; valves rounded on the back.

Upper Guinea. Cameroons: Buea, *Preuss,* 873, 873B. Fernando Po, *Mann,* 1175!

Lower Guinea. Angola, *Pogge,* 1445, 1458.

Imperfectly known Species.

6. **T. spinulosum,** *Pierre in Bull. Soc. Linn. Par.* ii. 1233 (*name only*).

Lower Guinea. Gaboon River, near Libreville, *Klaine,* 70.

7. **T. muricatum,** *Pierre in Bull. Soc. Linn. Par.* ii. 1233 (*name only*).

Lower Guinea. Gaboon River, near Libreville, *Klaine,* 159.

9. **THAUMATOCOCCUS,** Benth.; Benth. et Hook. f. Gen. Pl. iii. 652.

Sepals 3, free, lanceolate. Corolla-tube as long as the calyx; lobes 3, oblong, subequal. Staminodia united in a tube at the base; lip broad, undulate; staminiferous lobe narrow, with the 1-celled anther adnate to one side. Ovary 3-celled; cells 1-ovuled; style stout, adnate to the staminal tube at the base, hooked at the apex; stigma obliquely thickened and appendiculate at the back. Fruit trigonous, winged at the angles, thick, fleshy, indehiscent. Seeds solitary, erect, oblong, with a large aril; embryo horseshoe-shaped.—Rootstock wide-creeping. Leaves long-petioled. Spikes springing from the rhizome close to the leafy stems; flowers small, inconspicuous, two to each bract.

An endemic genus of one species.

1. **T. Danielli,** *Benth. Gen. Plant.* iii. 652. Whole plant 5–10 ft. high. Rhizome wide-creeping. Leaves 2–3 to a tuft; petiole very long, stiffly erect, grooved down the face; blade broadly oblong, moderately firm, glabrous, 1–1½ ft. long, rounded at the base. Spike nearly sessile, simple or forked, 3–4 in. long; bracts oblong-navicular, deciduous, about 1 in. long; internodes very short. Flowers pale purple, as long as the bract; sepals ⅓ in. long. Fruit acutely trigonous, bright crimson, above 1 in. diam.—*Phrynium Daniellii*, Bennett in Pharm. Journ. xiv. 161, with figure. *Monostiche Danielli*, Horan. Prodr. Scit. 13, t. 3.

Upper Guinea. Sierra Leone, *Johnston!* Ashanti: Assin-Yan-Coomassie, *Cummins*, 135! Lower Niger: Onitsa, *Barter*, 1546! Cameroons: Ambas Bay, *Mann*, 2145! Efulen, *Bates*, 396!

Lower Guinea. Princes Island, *Barter*, 1990! *Mann*, 1153! Island of St. Thomas: near Trindade, *Moller! Quintas!*

10. PHRYNIUM, Willd.; Benth. et Hook. f. Gen. Pl. iii. 652.

Sepals 3, oblong or lanceolate, free or adnate at the base to the corolla-tube. Corolla-tube cylindrical, longer or shorter than the calyx; lobes oblong. Staminodia united in a tube at the base; lip broad, transversely crested inside; staminiferous lobe linear, with the 1-celled anther adnate to one side. Ovary 3-celled; cells 1-ovuled; style adnate at the base to the staminal tube, hooked at the apex; stigma thickened, 2-valved. Fruit globose; pericarp usually thick and indehiscent. Seeds 1–3, ovoid or oblong, with a short reflexed aril and horseshoe-shaped embryo.—Petiole long, subradical; blade usually oblong. Inflorescence produced from the side of the petiole, capitate, spicate or panicled; bracts usually enclosing a pair of small inconspicuous flowers.—*Phyllodes*, Lour.; Schumann in Engl. Jahrb. xv. 440.

Species 30, the others Tropical Asiatic.

Acaulescent. Leaf long-petioled.
- Spike simple.
  - Sepals ⅛ in. long . . . . . 1. *P. holostachyum.*
  - Sepals ⅓ in. long . . . . . 2. *P. coriscense.*
- Spikes 1–3 . . . . . 3. *P. brachystachyum.*

Spikes panicled.
- Flowers comparatively large.
  - Apical callus of petiole 1–1½ in. long . . . 4. *P. Hensii.*
  - Apical callus of petiole 2–3 in. long.
    - Capsule ½–¾ in. diam.
      - Branches of panicle velvety . . . 5. *P. velutinum.*
      - Branches of panicle glabrous.
        - Bracts ovate . . . . . 6. *P. macrophyllum.*
        - Bracts oblong.
          - Bracts ¼ in. long . . . . 7. *P. Benthami.*
          - Bracts ¾ in. long . . . . 8. *P. adenocarpum.*
    - Capsule 1 in. diam. . . . . 9. *P. oxycarpum.*

Flowers small.
Blade of leaf 5–6 in. long.
Bracts $\frac{1}{2}$–$\frac{3}{4}$ in. long . . . . . 10. *P. monophyllum.*
Bracts 1–$1\frac{1}{4}$ in. long . . . . . 11. *P. leiogonium.*
Blade of leaf 6–12 in. long . . . . 12. *P. villosum.*
Blade of leaf 12–18 in. long . . . . 13. *P. prionogonium.*
Blade of leaf 16–20 in. long . . . . 14. *P. bisubulatum.*
Caulescent.
Spike simple . . . . . 15. *P. inæquilaterum.*
Spikes 1–3 . . . . . 16. *P. ramosissimum.*
Spikes panicled . . . . . 17. *P. sulphureum.*

1. **P. holostachyum,** *Baker.* Petiole long, stiffly erect, subradical; blade oblong-lanceolate, firm, glabrous, acute, 9–10 in. long, $2\frac{1}{2}$–3 in. broad, rounded at the base; cylindrical apical callus of the petiole 1 in. long. Spike simple, erect, produced from the petiole on a short peduncle a little below the blade, $1\frac{1}{2}$ in. long; bracts oblong-navicular, glabrous, slightly imbricate, $\frac{1}{2}$ in. long; peduncle 2-flowered, as long as the bract. Flower light yellow. Ovary globose, glabrous. Sepals ovate, $\frac{1}{8}$ in. long. Fruit depresso-globose, $\frac{1}{4}$ in. diam.

Lower Guinea. Gaboon: Sierra del Crystal, *Mann*, 1645!

2. **P. coriscense,** *Baker.* Whole plant 2–3 ft. long. Petiole long, subradical; cylindrical apical callus 1 in. long; blade oblong, cuspidate, moderately firm, glabrous, 6–10 in. long, $2\frac{1}{2}$–$3\frac{1}{2}$ in. broad, rounded at the base. Inflorescence a simple few-flowered erect spike springing from the sheathing petiole not far from its base; bract oblong-lanceolate-navicular, glabrous, $1\frac{1}{2}$ in. long. Peduncle nearly as long as the bract. Sepals lanceolate, $\frac{1}{3}$ in. long. Corolla twice as long as the calyx; lobes oblong. Staminiferous lobe of the andrœcium $\frac{1}{2}$-obovate. Fruit not seen.

Lower Guinea. Corisco Bay, *Mann*, 1907!

3. **P. brachystachyum,** *Koernicke in Bull. Soc. Nat. Mosc.* XXXV. 108. Whole plant 6–8 ft. high. Petiole long, subradical; cylindrical apical callus 1 in. long; leaf oblong, moderately firm, glabrous, 8–15 in. long, 4–8 in. broad, rounded at the base. Spikes 1–3, distichous, sessile or shortly peduncled, 1–2 in. long, springing from the petiole a short or long distance from the leaf; bracts oblong-navicular, glabrous or pubescent, much imbricate, $\frac{1}{3}$–$\frac{1}{2}$ in. long; peduncle as long as the bract, bearing several flowers, some rudimentary. Flowers small. Fruit globose, bright red, 2–3-seeded, $\frac{1}{2}$ in. diam. Seeds with many vertical grooves.—Horan. Prodr. 11; Benth. Gen. Plant. iii. 653. *Maranta* (?) *brachystachya*, Benth. in Hook. Niger Fl. 531.

Upper Guinea. Sierra Leone: Mahnoo, *Mrs. Mair!* near Tawia, River Scarcies, *Scott-Elliot*, 4473A! and without precise locality, *Scott-Elliot*, 4943! Liberia: Cape Palmas, *Vogel*, 29! Gold Coast, *Burton & Cameron!* Ashanti: Assin-Yan-Coomassie, 187! Lagos, *Barter*, 20168! Lower Niger: Onitsa, *Barter*, 1545! Niger Delta: Grand Bassa, *Vogel*, 77! River Nun, *Barter*, 20112! *Mann*, 517!

Lower Guinea. Corisco Bay, *Mann*, 1908!

4. **P. Hensii,** *Baker*. Whole plant 5–6 ft. long. Petiole long, subradical; cylindrical apical callus above 1 in. long; blade oblong, cuspidate, moderately firm, glabrous, rounded at the base, 9–10 in. long, 4–5 in. broad. Panicle small, shortly pedunculate, produced from the petiole some distance from the blade; bracts linear-oblong, glabrous, 1–1½ in. long; peduncle shorter than the bract. Sepals lanceolate, ¼ in. long. Corolla more than twice as long as the calyx. Fruit not seen.

South Central. Congo Free State: woods at Bangala, 1000 ft., *Hens*, 140!

5. **P. velutinum,** *Baker*. Whole plant 6 ft. high. Petiole long, radical, with an apical callus 2–3 in. long; leaf oblong, firm, glabrous, acute, 1½–2 ft. long, 1 ft. broad low down. Inflorescence panicled, arising from the petiole some distance below the blade; branches densely clothed with dark brown velvety pubescence; bracts oblong-spathulate, ¾–1 in. long, pubescent on the back and ciliated. Flowers white, in sessile pairs on short velvety peduncles. Calyx ¼ in. long; sepals lanceolate, membranous. Corolla less than twice the length of the calyx; petals oblong, pubescent outside. Ovary globose. Fruit unknown.

Upper Guinea. Cameroons: Efulen, at Forest Hill, *Bates*, 276!

6. **P. macrophyllum,** *Baker*. Whole plant 6–7 ft. high. Petiole long, radical, with a very large apical callus; leaf broadly oblong, firm, glabrous, unequal-sided, 15–20 in. long, 7–10 in. broad, rounded unequally at the base. Inflorescence panicled, arising from the petiole some distance below the blade; bracts ovate, subacute, glabrous; flowers in pairs on a peduncle ⅓–½ in. long. Calyx ¼ in. long. Corolla twice as long as the calyx. Outer staminodia subulate. Fruit bright red, globose, 3-seeded, ½–¾ in. diam. Seeds irregularly rugose and foveolate, ⅓ in. diam.—*Phyllodes macrophyllum*, Schumann in Engl. Jahrb. xv. 444.

Upper Guinea. Togo, *Baumann*, 174! Cameroons: between Ninga village and Kake, near Barombi, *Preuss*, 382!

7. **P. Benthami,** *Baker*. Whole plant 15 ft. high. Petiole very long, subradical; cylindrical apical callus 3 in. long; leaf broadly oblong, firm, glabrous, 15–18 in. long, 9–10 in. broad, much rounded at the base. Panicle of two branches with peduncles 3–6 in. long springing from the petiole a short distance below the blade; internodes of rhachis ⅙–¼ in. long; bracts oblong-navicular, ¾–1 in. long; peduncle 2-flowered, ¼ in. long. Fruit globose, 3-seeded, ½ in. diam. Seed ⅓ in. long, with a smooth dorsal rib and cupular aril.—*P. macrostachyum*, Benth. Gen. Pl. iii. 653 (not of Wallich). *Phyllodes macrostachyum*, K. Schum. in Engl. Jahrb. xv. 445.

Upper Guinea. Ashanti: Assin-Yan-Coomassie, *Cummins*, 206! Lagos, *Millen*, 19 of 1896 collection! Cameroons: Ambas Bay, *Mann*, 1335!

8. **P. adenocarpum,** *Baker*. Whole plant 9–12 ft. high. Petiole long, subradical; cylindrical apical callus 2–3 in. long; leaf oblong, cuspidate, moderately firm, glabrous, 12–16 in. long, 6–10 in. broad, unequally rounded at the base. Inflorescence panicled, arising from the petiole some distance from the blade; bracts oblong-navicular, $\frac{3}{4}$ in. long, peduncle and pedicels short. Sepals oblong, acute, $\frac{1}{4}$ in. long, adnate for nearly their whole length to the corolla-tube. Corolla twice as long as the calyx. Outer staminode bidentate. Fruit globose, trisulcate, $\frac{1}{2}$ in. diam. Seed $\frac{1}{2}$ in. long, irregularly foveolate and tubercled.—*Phyllodes adenocarpum*, Schumann in Engl. Jahrb. xv. 442.

Upper Guinea. Cameroons: between Barombi and Ninga village, *Preuss*, 343!

9. **P. oxycarpum,** *Baker*. Whole plant 12 ft. high. Petiole long, subradical; cylindrical apical callus 2 in. long; leaf oblong, cuspidate, moderately firm, glabrous, 10–16 in. long, 6–10 in. broad, rounded at the base. Inflorescence panicled, arising from the petiole some distance below the blade; bracts oblong-navicular, nearly 1 in. long; flowers 2 to each bract. Sepals oblong-lanceolate, $\frac{1}{4}$ in. long. Petals twice as long as the calyx. Outer staminode bidentate at the apex; central cusp long. Fruit globose, subtrigonous, 1 in. diam. Seeds tubercled, $\frac{1}{2}$ in. long.—*Phyllodes oxycarpum*, Schumann in Engl. Jahrb. xv. 443.

Upper Guinea. Cameroons: between Ninga village and Barombi, in low forest, *Preuss*, 381! 513.

10. **P. monophyllum,** *Baker*. Whole plant $1\frac{1}{2}$ ft. long. Petiole slender, radical, 1 ft. long; cylindrical apical callus $\frac{1}{2}$ in. long; leaf oblong, subacute, glabrous, 5–6 in. long, 3–4 in. broad, pinnately variegated with white streaks, deltoid at the base. Inflorescence panicled, arising from the sheaths that invest the lower part of the petiole; bracts linear-oblong, glabrous, above $\frac{1}{2}$ in. long; peduncle longer than the bract, bearing 2 flowers, one on a short, the other on a longer pedicel. Ovary villous. Sepals lanceolate, $\frac{1}{6}$ in. long. Petals under $\frac{1}{2}$ in. long. Fruit globose, 2-seeded, $\frac{1}{4}$–$\frac{1}{3}$ in. diam.; pericarp thin. Seed globose, $\frac{1}{6}$ in. diam.—*Phyllodes monophyllum*, Schumann in Engl. Jahrb. xv. 440.

Lower Guinea. Gaboon: Munda, Sibange Farm, *Soyaux*, 176!

11. **P. leiogonium,** *Baker*. Petiole very long; cylindrical apical callus nearly 3 in. long; leaf oblong, acute, moderately firm, glabrous, 12–16 in. long, 5–6 in. broad, rounded at the base. Panicle large, lax, pedunculate, springing from the side of the petiole a long distance below the blade; bracts oblong-navicular, 1–$1\frac{1}{4}$ in. long; peduncle as long as the bract, having 2 perfect and some abortive flowers; pedicels very short. Flowers under $\frac{1}{2}$ in. long. Fruit globose, $\frac{1}{2}$ in. diam., 6-angled, 3-seeded. Seed $\frac{1}{2}$ in. ong, quadrangular, with smooth ribs and the intermediate faces also smooth.—*Phyllodes leiogonium*, Schumann in Engl. Jahrb. xv. 442.

South Central. Lunda: Bashilange; in a swamp by the River Luachim, *Pogge*, 696!

Lower Guinea. Cameroons: Efulen, *Bates*, 375!

Phyllodes baccatum, Schumann in Engl. Jahrb. xv. 442, gathered in Lunda, Bashilange country, at Mukenge, by *Pogge*, 1439, and the Lake region by *Stuhlmann*, 1200, is said to differ from *P. leiogonium* by its 6-angled seeds, honeycombed between the entire ribs.

12. **P. villosum,** *Benth. Gen. Plant.* iii. 653. Petiole long, subradical, densely villous; cylindrical apical callus $1\frac{1}{2}$–2 in. long; leaf oblong-lanceolate, cuspidate, 6–12 in. long, 2–$2\frac{1}{2}$ in. broad, moderately firm, glabrous, rounded at the base. Inflorescence panicled, springing from the petiole some distance below the leaf; branches and erecto-patent bracts very hairy, the latter oblong-navicular, $\frac{3}{4}$–1 in. long; peduncle longer than the bract, bearing 2 perfect and several rudimentary flowers. Ovary glabrous. Sepals oblong, $\frac{1}{8}$ in. long. Corolla $\frac{1}{4}$ in. long. Staminodia not longer than the petals. Mature capsule unknown.—*Phyllodes villosum*, Schumann in Engl. Jahrb. xv. 445.

Lower Guinea. Banks of the Gaboon River, *Mann*, 1032!

13. **P. prionogonium,** *Baker.* Whole plant 6 ft. high. Petiole long, subradical; cylindrical apical callus 2–3 in. long; leaf oblong-cuspidate, moderately firm, glabrous, 12–18 in. long, 5–7 in. broad, rounded at the base. Panicle ample, lax, sometimes a foot broad, springing from the petiole some distance below the blade; bracts oblong-navicular, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long; peduncle as long as the bract or exserted, bearing 2 perfect and some rudimentary flowers. Sepals oblong-lanceolate, obtuse, $\frac{1}{5}$ in. long. Petals scarcely longer than the calyx. Outer staminodia orbicular, unguiculate. Fruit globose, red, $\frac{3}{4}$ in. diam. Seeds 4-angled; ribs serrated; faces foveolate.—*Phyllodes prionogonium*, Schumann in Engl. Jahrb. xv. 441.

Upper Guinea. Cameroons: in the forest of Barombi-ba-Mbu, *Preuss*, 458!

14. **P. bisubulatum,** *Baker.* Petiole long; blade oblong, shortly cuspidate, 16–20 in. long, 12–14 in. broad, rounded at the base. Inflorescence panicled; ultimate branchlets $1\frac{1}{2}$ in. long, much thickened at the nodes; bracts ovate, acute, above $\frac{1}{2}$ in. long and broad; flowers 2 to a bract; peduncle very short. Sepals oblong, obtuse, $\frac{1}{8}$–$\frac{1}{6}$ in. long. Petals oblong, 2–3 times the length of the calyx. Outer staminodia subulate, not protruding beyond the petals. Fruit unknown.—*Phyllodes bisubulatum*, Schumann in Bolet. Soc. Brot. xi. 83.

South Central. Lunda: between the River Luachim and Quihunbo, 2600 ft., *Marques*.

No specimen in the Kew Herbarium.

15. **P. inæquilaterum,** *Baker.* Stems 2 ft. long, bearing two short horizontal branches. Leaf oblong, firm, glabrous, very unequal-sided, 3–6 in. long, $1\frac{1}{2}$–$2\frac{1}{2}$ in. broad, obtuse, unequally rounded at the base; petiole entirely sheathing, 2–3 in. long; apical callus very small.

Inflorescence a simple spike produced 1–2 from each branch a short distance below the leaf-blade; bract cylindrical, glabrous, $\frac{1}{2}$ in. long; peduncle 2-flowered, protruding beyond the tip of the bract, one flower sessile, the other pedicellate. Flower and fruit unknown.

Upper Guinea. Cameroons: River Cameroon, *Mann*, 2142!

16. **P. ramosissimum,** *Benth. in Hook. Niger Fl.* 532. Stems branched, 6–12 ft. long. Leaf oblong-cuspidate, moderately firm, glabrous, 6–10 in. long, 3–4 in. broad, rounded at the base; petiole sheathing the branch nearly to the top; cylindrical apical callus under $\frac{1}{2}$ in. long. Spikes 1–3, shortly pedunculate, 4–6 in. long, ascending or recurved; bracts oblong-navicular, 1–1$\frac{1}{2}$ in. long; peduncles 2-flowered, as long as the bract. Ovary densely villous. Sepals lanceolate, $\frac{1}{2}$ in. long. Petals twice as long as the calyx. Staminodia not longer than the petals. Fruit globose, 3-seeded, $\frac{1}{4}$ in. diam.—Horan. Prodr. 11.

Upper Guinea. Senegambia, *Heudelot*, 729! Sierra Leone: Scarcies River; near Kambia, *Scott-Elliot*, 4196! and near Tawia, *Scott-Elliot*, 4473B! on the way to Port Lokko, *Scott-Elliot*, 5877! Niger Territory: Nupe, *Barter*, 1542! Fernando Po, *Mann*, 100! 1174! *Barter*, 1544! *Vogel*, 165! 178! Cameroons: River Cameroon, *Mann*, 2141!

Lower Guinea. Angola: Bembe, and common in all the interior, *Monteiro!*

17. **P. sulphureum,** *Baker.* Stem erect, simple, bearing in its upper part three leaves with long sheathing petioles (lowest 6 in. long) and a cylindrical apical callus $\frac{1}{4}$ in. long; blade oblong, unequal-sided, cuspidate, 5–6 in. long, 2–2$\frac{1}{2}$ in. broad, moderately firm, glabrous, unequally rounded at the base. Inflorescence a small crowded erect panicle springing from the hairy sheath of the topmost leaf a short distance below the blade; bracts cylindrical, pubescent, $\frac{1}{2}$ in. long. Peduncle 2-flowered, protruded from the tip of the bract; one flower sessile, the other pedicellate. Flowers light yellow. Fruit unknown.

Lower Guinea. Gaboon: Sierra del Crystal, *Mann*, 1643!

11. **CALATHEA,** G. F. Meyer; Benth. et Hook. f. Gen. Pl. iii. 653.

Sepals 3, free, equal, imbricate. Corolla-tube shorter or longer than the calyx; lobes 3, spreading, oblong. Staminodia united in a tube at the base; lip broad, not crested inside; staminiferous lobe narrow or broad, with the 1-celled anther adnate to one side. Ovary 3-celled; cells 1-ovuled; style adnate at the base to the staminal tube, hooked at the lip; stigma 2-valved. Fruit ovoid or 3-lobed; pericarp usually thin. Seeds usually 3, erect, ovoid, with a reflexed aril and horseshoe-shaped embryo.—Spikes terminal on a long stem in the centre of a rosette of leaves, or on a short leafless stem arising from the rhizome. Leaves often variegated. Flowers usually several to each primary bract.

Species 50 or more, all the others Tropical American.

Inflorescence on a leaf-bearing stem.
Spikes single, erect . . . . . 1. *C. Mannii.*
Spikes two, deflexed . . . . . 2. *C. conferta.*
Inflorescence arising from the rhizome, leafless . . 3. *C. rhizantha.*

1. **C. Mannii,** *Benth. Gen. Plant.* iii. 653. Whole plant 6–8 ft. high. Leaves 4 in a tuft at the top of a long stem; petiole broad, deeply channelled, 6–8 in. long, with a large cylindrical callus at the apex; blade oblong-cuspidate, moderately firm, glabrous, 6–10 in. long, 4–5 in. broad, rounded at the erect apex. Spike single, oblong, erect, sessile in the centre of the rosette of leaves, 2 in. long; bracts oblong-navicular, distichous, about 4 on each side of the spike, much imbricate, the lower $1\frac{1}{2}$ in. long. Flowers many to a bract, reaching to its tip; bracteoles lanceolate. Fruit not seen.

Upper Guinea. Fernando Po, *Mann*, 1173 !

2. **C. conferta,** *Benth. Gen. Plant.* iii. 653. Stem stiffly erect, above a foot long, bearing leaves at its apex; petioles deeply channelled, 6–9 in. long, with a cylindrical callus at the apex; blade oblong-cuspidate, moderately firm, glabrous, 6–12 in. long, $2\frac{1}{2}$–$4\frac{1}{2}$ in. broad, rounded at the base. Spikes 2, crowded, sessile or shortly peduncled in the centre of the tuft of leaves, deflexed, oblong, $1\frac{1}{2}$ in. long; bracts oblong-navicular, much imbricate, the lowest 1 in. long. Flowers several to each bract; bracteoles lanceolate. Sepals lanceolate. Corolla-tube cylindrical, as long as the calyx; lobes oblong, shorter than the tube. Staminodia rather shorter than the corolla-lobes. Capsule thin, containing 1 oblong black seed.—*Phrynium textile*, Ridley in Journ. Bot. 1887, 133.

Upper Guinea. Cameroon Mountain, 3000 ft., *Mann*, 2444 ! Ashanti: Assin-Yan-Coomassie, *Cummins*, 64 !

Lower Guinea. Angola: Golungo Alto; by streams in the woods of Quisuculo, *Welwitsch*, 6439 !

3. **C. rhizantha,** *K. Schumann in Engl. Jahrb.* xv. 433. Rhizome wide-creeping. Leaves in pairs from the rhizome; petiole 2 ft. long; blade oblong-lanceolate, moderately firm, glabrous, 1 ft. long, 3–4 in. broad, deltoid at the base. Spike direct from the rhizome, shortly peduncled, 3–4 in. long; rhachis slightly flexuose; internodes $\frac{1}{2}$ in. long; bracts oblong, navicular, imbricate, 1 in. long. Flowers in pairs, shortly pedicellate, whitish, reaching to the tip of the bract; sepals lanceolate, $\frac{1}{2}$ in. long. Fruit unknown.

Upper Guinea. Cameroons: Bipinde, in forest, *Zenker* ,1128 !
Lower Guinea. Gaboon: Munda, Sibange Farm, *Soyaux*, 84 !

12. **CANNA,** Linn.; Benth. et Hook. f. Gen. Pl. iii. 654.

Sepals 3, equal, free, lanceolate, persistent. Petals 3, equal, lanceolate, united in a tube at the base. Staminodia united in a tube at the base, which is adnate to the staminal tube; lobes petaloid; anther

1-celled, adnate to one side of a petaloid lobe. Ovary 3-celled; ovules many in a cell; style adnate at the base to the staminal tube, linear, flattened; stigmatose at the apex; stylodia often also present. Capsule globose, densely echinate, indehiscent. Seeds subglobose; testa finally crustaceous; embryo straight, in the centre of the hard albumen.—Tall herbs, with leafy stems. Leaves broad, oblong. Flowers in terminal racemes; bracts membranous. Outer staminodia 2–3, oblong-spathulate, petaloid, usually bright red or yellow, often spotted.

Species 20–30, all but two natives of Tropical and Subtemperate America.

1. **C. indica,** *Linn.* subsp. **C. orientalis,** *Rosc. Scit. t.* 12. Stem glabrous, 4–6 ft. long. Leaves oblong, acute, green or tinged with brown, the lower 1 ft. long, 4–5 in. broad. Racemes lax, terminal on the leafy stem, simple or forked; pedicels short; bracts small, ovate. Sepals oblong-lanceolate, green, $\frac{1}{4}$–$\frac{1}{2}$ in. long. Petals lanceolate, $1\frac{1}{2}$ in. long. Upper staminodia 3, oblanceolate, 2 in. long, bright red, distinctly emarginate; lip red-yellow, linear, distinctly emarginate. Fruit globose, 1 in. long. Seeds globose, black, smooth, $\frac{1}{6}$ in. diam.—*C. indica,* Roxb. Fl. Ind. i. 1; Ridley in Journ. Bot. 1887, 134. *C. Ehrenbergii,* Bouché in Linnæa, viii. 150; Horan. Prodr. 16. *C. bidentata,* A. Bertol. Misc. xx. 9, t. 1.

Upper Guinea. Senegal, *Roger!* Sierra Leone, *Morson! Vogel!* Ashanti, *Cummins!* Lower Niger: Abo, *Barter,* 198!

Nile Land. British East Africa: Nyika country, near Mombasa, *Wakefield!*

Lower Guinea. Annabon Island, *Burton!* Island of St. Thomas, *Moller,* 101! Lower Congo, *Burton!* Angola: Bembe, *Monteiro!* Golungo Alto; in reed-beds by the streams, and in damp woods, *Welwitsch,* 6448! Pungo Andongo; by streams within the fortifications, *Welwitsch,* 6448B.

South Central. Monbuttu: Munza, *Schweinfurth,* ser. iii. 203!

Mozamb. Dist. Portuguese East Africa: Lower Valley of the Shire River, *Meller!* British Central Africa: Nyasaland; between Kondowe and Karonga, *Whyte!*

Also Natal and Tropical Asia. The typical *C. indica,* Linn., Rosc. Scit. i. 1, is a native of Tropical America. A plant sent from Angola by Mr. Monteiro, which flowered at Kew in 1896, was referred by Mr. N. E. Brown to *C. speciosa,* Rosc. Scit. t. 17, which is stated to have been introduced from Africa in 1819, and afterwards from Calcutta by Dr. Wallich, who found it growing wild in Nepal.

13. **MUSA,** Linn.; Benth. et Hook. f. Gen. Pl. iii. 655.

Calyx tubular, 3–5-lobed, slit down one side. Petal one, entire or 3-lobed, placed opposite the slit side of the calyx. Perfect stamens 5; sixth rudimentary; filaments filiform; anthers linear, 2-celled. Ovary 3-celled; ovules many in a cell; style filiform; stigma terminal, 6-toothed. Fruit fleshy, indehiscent. Seeds globose or angled by pressure, often excavated at the hilum; albumen farinaceous; testa intruded into the albumen at the apex and base; embryo straight.—Stems cylindrical or bottle-shaped, woody, formed by the union of the leaf-stalks. Bracts large and spathaceous. Flowers in terminal spicate panicles, unisexual, few or many to a bract, those of the lower bracts fertile, those of the upper bracts staminate.

Species about 20, confined to tropical regions of the Old World, in America cultivated only.

For a detailed account of the genus and its uses, see *Kew Bulletin*, 1894, 229.

*PHYSOCAULIS. Trunk ventricose. Fruit not edible.

Seeds large.

Seeds about 1 in. diam.

Petal cuspidate.

Flowers about 20 in a row . . . . . 1. *M. Ensete.*

Flowers about 10 in a row . . . . . 2. *M. Buchanani.*

Petal not cuspidate . . . . . 3. *M. ventricosa.*

Seeds $\frac{1}{3}$–$\frac{1}{2}$ in. diam.

Seed with a large hollow at the hilum . . . 4. *M. livingstoniana.*

Seed with a small hollow at the hilum . . . 5. *M. proboscidea.*

**EUMUSA. Trunk cylindrical. Fruit edible. Seeds small or absent.

The only species . . . . . 6. *M. sapientum.*

1. **M. Ensete,** *Gmel. Syst. Nat.* ii. 567. Whole plant reaching a height of 30–40 ft. Stem ventricose at the base, 8 ft. in circumference, not stoloniferous. Leaves oblong, bright green, reaching a length of 20 ft. and a breadth of 3 ft.; midrib brown; petiole short, broad, deeply channelled. Peduncle short; flowering panicle short; bracts densely imbricate, dark, claret-brown, the lower a foot long, 4–5 in. broad. Flowers whitish, $1\frac{1}{2}$–2 in. long, in two dense rows, up to 20 in a row. Ovary cylindrical, above 1 in. long. Calyx lingulate, 3-lobed. Petal small, orbicular, with a subulate cusp. Fertile stamens as long as the calyx; sixth rudimentary, subulate. Fruit coriaceous, dry, 2–3 in. long. Seeds 1–4, black, glossy, transversely oblong, nearly 1 in. diam., with a prominent raised border round the hilum.—Hook. in Bot. Mag. t. 5223–4; Rev. Hort. 1881, 144; Flore des Serres, t. 1418; Gard. Chron. 1881, xv. 434, fig. 84; Baker in Annals Bot. vii. 205; Kew Bulletin, 1894, 240 and 237 with fig. *Ensete edule*, Horan. Prodr. 40. *Ensete*, Bruce, Trav. ed. 1, v. Append. 36, with plates.

Nile Land. Abyssinia, *Plowden!* British East Africa: Niamniam; Baginse Mountain, *Schweinfurth*, ser. ii. 130! Madi, *Speke & Grant*, 630! Uganda; Kampala, *Scott-Elliot*, 7165!

It is also reported to have been seen by travellers at Goudokoro, in Bari, in Monbuttu, and in German East Africa, in the Karagwe, Mpororo, and Kilimanjaro districts.

For information as to its uses, see Bruce's "Travels to discover the Source of the Nile," Append. 36; Grant in Trans. Linn. Soc. xxix. 153; Duchartre in Journ. Soc. Nat. Hort. France, 1887, 242; and Warburg in Engl. Pfl. Ost-Afr. B. 99. A plant with stolons seen by Heuglin in Semen, and another seen by Grant in Uganda with a stem like two great drums placed one upon another, require further investigation.

2. **M. Buchanani,** *Baker in Annals Bot.* vii. 207. Nearly allied to *M. Ensete*, but the lower bracts linear-oblong, $1\frac{1}{2}$ ft. long, 4 in. broad. Flowers 10 in a row. Ovary cylindrical, above an inch long. Calyx as long as the ovary. Seeds as large as those of *M. Ensete*, glossy, black, not tubercled.—Baker in Kew Bulletin, 1894, 241.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, 2000 ft., *Buchanan*, 470!

3. **M. ventricosa,** *Welw. Apont. Phyto-Geogr.* 545, 578. Whole plant 8–10 ft. high. Stem much swollen, 4 ft. diam. at the base. Leaves oblanceolate-oblong, bright green, 4–5 ft. long; midrib pale red; petiole very short and stout. Panicle drooping, nearly as long as the leaves; petiole very short and stout; sterile bracts lanceolate, 1–1½ ft. long; flower bracts oblong, 8–12 in. long; 3–4½ in. broad. Flowers densely clustered, 2 in. long. Calyx 3-lobed, longer than the ovary. Petal ovate, entire, ⅓ in. long. Fruit like that of *M. Ensete*. Seeds as large as those of *M. Ensete*, dull black, with a broad hollow at the hilum.—Ridley in Journ. Bot. 1887, 134; Baker in Annals Bot. vii. 206; Kew Bulletin, 1894,.241.

Lower Guinea. Angola: Pungo Andongo; in rocky places near rivulets, *Welwitsch*, 6447!

M. africana, Bull Cat. 1871, 6, is probably this species in a young state.

4. **M. livingstoniana,** *Kirk in Journ. Linn. Soc.* ix. 128. Stem conical, twice the height of a man, 2–3 ft. diam. Leaves narrowly oblong, crowded, as long as the trunk, with a short broad-clasping deeply channelled petiole. Fruit many-seeded, 4 in. long. Seeds globose, angled by pressure in the lower half, ½ in. diam., dull brown, tubercled, with a depressed hilum surrounded by prominent edges.—Baker in Annals Bot. vii. 207; Kew Bulletin, 1894, 241.

Mozamb. Dist. Portuguese East Africa: Gorongozo, *Kirk!* British Central Africa: Nyasaland; Maravi country, and near Lake Shirwa, *Kirk!*

Is in cultivation at Kew from seeds sent by Buchanan and Mahon. The sap of the leaves is bright red.

There is in the Kew Museum a necklace of similar seeds, brought by Barter from Sierra Leone.

5. **M. proboscidea,** *Oliv. in Hook. Ic. t.* 1777. Trunk swollen at the base, reaching 4–5 times the height of a man. Leaves narrowly oblong, very large, 4–5 times as long as broad, narrowed from the middle to the base; petiole short, deeply channelled. Panicle drooping, very long; bracts broadly ovate, obtuse, about four times the length of the flowers; flowers in close rows of about a dozen. Calyx as long as the cylindrical ovary. Petal orbicular, small, with a linear central cusp. Seeds turbinate, black, glossy, ½ in. long and broad, with only a small hollow at the bottom.—Baker in Annals Bot. vii. 207; Kew Bulletin, 1894, 241.

Mozamb. Dist. German East Africa: Hills of Ukami, *Kirk!*

6. **M. sapientum,** *Linn. Sp. Plant. ed.* 2, 1477. Stem cylindrical, reaching a length of 20–25 ft., 4–6 in. diam., stoloniferous at the base. Leaves oblong, bright green, 5–8 ft. long; petiole 1–1½ ft. long. Panicle drooping, often 4–5 ft. long; male flowers deciduous; bracts oblong-lanceolate, dull violet, more or less glaucous outside; flowers

about 12 in a cluster, yellowish-white, 1½ in. long. Calyx 5-toothed at the apex. Petal ovate, half as long as the calyx. Fruit oblong-trigonous, seedless, bright yellow when ripe, 3–4 in. long, the flesh fit to eat without cooking.—Trew, Pl. Sel. t. 21–23; Baker in Annals Bot. vii. 211; Kew Bulletin, 1894, 250.

Var. *M. paradisiaca*, Linn. Sp. Plant. ed. 2, 1477. Male flowers and bracts less deciduous. Fruit ½–1 ft., with firmer and less saccharine pulp, not fit to eat without cooking.—Trew, Pl. Sel. t. 18–20; Kew Bulletin, 1894, 250 and 232 with fig. *M. cliffortiana*, Linn. Musa Cliff. 1, t. 1.

Tropical Africa. Universally cultivated, ascending to 6000–7000 ft. For details, see Kew Bulletin, 1894, 252; Warburg in Engl. Pfl. Ost-Afr. B. 91.

The special African forms are:—

Var. *Massoni*, Baker. Nearly allied to *M. Cavendishii*, Lamb., with a shorter trunk, petiole and panicle than in the type, and oblong small slightly curved saccharine fruits.—*M. Massoni*, Sagot in Journ. Soc. Nat. Hort. France, 1887, 293.

Lower Guinea. Gaboon.

No specimen in the Kew Herbarium.

Var. *vittata*, Hook. in Bot. Mag. t. 5402. Leaves pinnately variegated with bands of white. Bracts bright red inside. Fruits 6–8 in. long, with vertical stripes of white and green.—Kew Bulletin, 1894, 250 with fig. *M. vittata*, Ackerm. in Flore des Serres, t. 1510–1513.

Lower Guinea. Island of St. Thomas, brought into cultivation by *Ackermann & Mann*.

Var. *sanguinea*, Welw. ex Ridley in Journ. Bot. 1887, 134. Trunk and leaves more or less tinged with bright red.

Lower Guinea. Angola: Golungo Alto; Ponte de Luiz Gomez, *Welwitsch*, 6446; Cazengo, cultivated, *Welwitsch*, 6446B! "Bananeira roxa."

No specimen in the Kew Herbarium.

ORDER CXXXV. HÆMODORACEÆ. (By J. G. Baker.)

Flowers hermaphrodite, regular or slightly irregular. Perianth corolline, with or without a tube above the ovary; segments more or less distinctly bisexual. Stamens 6, all perfect in the Tropical African genera, inserted at the base of the perianth-lobes; filaments filiform; anthers versatile and dehiscing longitudinally, or basifixed and dehiscing by terminal pores. Ovary inferior, half-inferior, or superior, 3-celled; ovules 1–2 or many in a cell; style filiform; stigma capitate, 3-lobed. Fruit dehiscent or indehiscent. Seeds globose or discoid, albuminous; embryo small.—Perennial herbs, sometimes densely hairy all over. Rootstock a rhizome or corm. Leaves very various. Flowers panicled, racemose or cymose, usually small and inconspicuous.

Species 120, concentrated in Australia.

Perianth with a cylindrical tube. Anthers dehiscing longitudinally. Ovary superior	1. SANSEVIERIA.
Perianth with a very short tube. Anthers dehiscing by terminal pores. Ovary half-inferior . . .	2. CYANASTRUM.

1. **SANSEVIERIA,** Thunb.; Benth. et Hook. f. Gen. Pl. iii. 679.

Perianth corolline, with a cylindrical tube and 6 linear lobes. Stamens 6, inserted at the base of the perianth-lobes; filaments filiform, nearly as long as the lobes; anthers linear-oblong, dorsifixed, versatile, dehiscing longitudinally. Ovary superior, globose, 3-celled; ovules solitary, erect; style long, filiform; stigma capitate. Fruit membranous, soon bursting. Seeds 1–3, globose; testa lax, fleshy; embryo straight, placed near the base of the albumen.—Leaves in clusters from a creeping rootstock, coriaceous, containing abundance of useful fibre. Peduncle stout, with several empty bracts; racemes dense, with several flowers to each bract, and pedicels articulated near the middle. Flowers greenish-white.

Species about 12. Also in South Africa, Mascarene Isles, and Tropical Asia.

Leaves comparatively thin, flat except at the base.
- Perianth $\frac{3}{4}$–1 in. long.
  - Leaves oblanceolate, a foot long . . . . . 1. *S. senegambica.*
  - Leaves lanceolate 8 ft. long . . . . . 2. *S. nilotica.*
- Perianth $1\frac{1}{2}$–2 in. long . . . . . 3. *S. guineensis.*
- Perianth $2\frac{1}{2}$–3 in. long . . . . . 4. *S. bracteata.*
- Perianth 4–5 in. long . . . . . 5. *S. longiflora.*

Leaves thicker, nearly flat in the upper half . . . 6. *S. Kirkii.*

Leaves rounded on the back, deeply channelled down the face.
- Leaves $1\frac{1}{2}$ ft. long, $\frac{1}{3}$–$\frac{1}{2}$ in. diam. . . . . 7. *S. Volkensii.*
- Leaves 5–6 ft. long, $1\frac{1}{2}$ in. diam. . . . . 8. *S. Ehrenbergii.*

Leaves terete.
- Leaves with a small facial groove . . . . 9. *S. Schimperi.*
- Leaves without any facial groove except at the base.
  - Primordial leaves flat . . . . . 10. *S. cylindrica.*
  - Primordial leaves terete . . . . . 11. *S. sulcata.*

Doubtful native of Tropical Africa . . . . 12. *S. grandicuspis.*

1. **S. senegambica,** *Baker in Journ. Linn. Soc.* xiv. 548. Leaves oblanceolate, acute, nearly flat, rigidly coriaceous, 1 ft. long, 2 in. broad above the middle, narrowed to a base $\frac{1}{2}$ in. broad, not at all margined with red. Peduncle with raceme overtopping the leaves; pedicels 3–6-nate, $\frac{1}{6}$–$\frac{1}{4}$ in. long, articulated at the middle; bracts small, ovate, white, scariose. Perianth $\frac{3}{4}$–1 in. long; tube cylindrical, very slender; lobes as long as the tube. Stamens as long as the perianth-lobes. Style finally exserted.

Upper Guinea. Senegal, *Perrottet*, 782! *Richard*, 72!

2. **S. nilotica,** *Baker in Journ. Linn. Soc.* xiv. 548. Rootstock wide-creeping, as thick as a man's finger. Leaves lanceolate, flat, 3 ft. long, $1\frac{1}{2}$ in. broad at the middle, narrowed gradually to the base and apex, spotted with white, apparently less rigid than in *S. guineensis*, without any red intermarginal line. Racemes lax, 1–$1\frac{1}{2}$ ft. long; bracts small, lanceolate; flowers 3–9 in a cluster; pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long, articulated above the middle. Perianth white tinged with green,

$\frac{3}{4}$–1 in. long; lobes rather longer than the tube. Style finally shortly exserted.—Gürke in Engl. Pfl. Ost-Afr. B. 367, t. 5, fig. J.

Nile Land. British East Africa: Banks of the White Nile in a wood, *Petherick!* Mittu: near Mvolo, *Schweinfurth*, 3834!

3. **S. guineensis,** *Willd. Sp. Plant.* ii. 159. Rootstock wide-creeping, as thick as a man's finger. Leaves 3–6 to a node, lanceolate, nearly flat above the base, 3–4 ft. long, $2\frac{1}{2}$–5 in. broad at the middle, more or less distinctly mottled with white, sometimes bordered with a thin line of red within the white edge. Peduncle 1–$1\frac{1}{2}$ ft. long, with 3–4 scariose bract-leaves. Raceme dense, $1\frac{1}{2}$–2 ft. long, about 3 in. diam.; flowers 3–6 in a cluster; bracts small, oblong-lanceolate; pedicels $\frac{1}{6}$–$\frac{1}{4}$ in. long, articulated at the middle. Perianth $1\frac{1}{2}$–2 in. long, white, tinged with green or brown; lobes as long as the tube. Stamens as long as the perianth-lobes. Style finally much exserted.—Gawl. in 1160 Bot. Mag. t. ~~1179~~; Red. Lil. t. 330; Kunth, Enum. v. 16; Baker in Journ. Linn. Soc. xiv. 547; Kew Bulletin, 1887, May, 5 and 3, fig. 1; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 79; Engl. Pfl. Ost-Afr. C. 144, t. 5, figs. A–F. *Aletris hyacinthoides*, var. *guineensis*, Linn. Sp. Plant. ed. 2, 456. *Aletris guineensis*, Jacq. Hort. Vind. i. 36, t. 84. *Acyntha guineensis*, Medic. Theod. 76.

Upper Guinea. Sierra Leone: Sugarloaf Mountain, *Scott-Elliot*, 3980! on rocks by the River Scarcies at Sasseni, *Scott-Elliot*, 4532! and without precise locality, *Afzelius!* Niger Territory: Nupe, *Barter*, 1508! Fernando Po, *Barter*, 2060!

Nile Land. Eritrea: Saganeiti, 6500 ft., *Schweinfurth & Riva*, 1270! Mogod Valley, *Schweinfurth & Riva*, 1609! near Acrour, *Schweinfurth & Riva*, 1763! Keren, *Steudner*, 475! *Beccari*, 198! Somaliland: Golis Range, *Mrs. Lort Phillips!* British East Africa: Jur; Seriba Agad, *Schweinfurth*, 1658! Jur Ghattas, *Schweinfurth*, 1883! Madi, *Speke & Grant*, 526! Rabai Hills, near Mombasa, *Taylor!*

Lower Guinea. Lower Congo, *Laurent!*

Mozamb. Dist. German East Africa: Zanguebar, *Stewart!* Portuguese East Africa: Lower Zambesi; between Shiramba and Shigogo, *Kirk*, 178!

Now widely cultivated throughout the Tropics. For an account of the uses of this and the other species, see Kew Bulletin, 1887, May, and Gürke in Engl. Pfl. Ost-Afr. B. 364–368. *S. lætevirens, glauca* and *polyphylla* of Haworth are probably garden forms of this species.

4. **S. bracteata,** *Baker in Trans. Linn. Soc. ser.* 2, i. 253. Leaves oblanceolate, flat, rigidly coriaceous, 1–2 ft. long, 2–$2\frac{1}{2}$ in. broad above the middle, narrowed gradually to a concave base, furnished with a distinct red margin. Peduncle 1–$1\frac{1}{2}$ ft. long, furnished with scariose ovate erect amplexicaul bract-leaves, the lower 3–4 in. long. Raceme dense, simple, 2–6 in. long; bracts oblong-lanceolate, scariose, $\frac{3}{4}$–1 in. long; pedicels very short, densely fascicled. Perianth white, $2\frac{1}{2}$–3 in. long; lobes under 1 in. long. Style and stamens not exserted.

Lower Guinea. Angola: Pungo Andongo; in rather dry rocky soil at a considerable elevation, *Welwitsch*, 3750! 3751!

Mozamb. Dist. German East Africa: Uluguru? *Stuhlmann!*

5. **S. longiflora,** *Sims in Bot. Mag. t.* 2634. Leaves 4–6 to a node, nearly flat, lanceolate, 3–5 ft. long, 3–5 in. broad at the middle, narrowed gradually to a concave base 1 in. diam., more or less mottled, distinctly bordered with red. Peduncle 1 ft. or more long, with several ascending scariose bract-leaves. Raceme dense, 1 ft. or more long, 8–9 in. diam.; bracts scariose, lanceolate, $\frac{1}{2}$–$\frac{3}{4}$ in. long; pedicels $\frac{1}{6}$–$\frac{1}{4}$ in. long, densely fascicled, articulated at the middle. Perianth greenish-white, 4–5 in. long; lobes about 1 in. long. Stamens as long as the perianth-lobes. Style much exserted.—Schult. f. Syst. Veg. vii. 357; Kunth, Enum. v. 17; Baker in Journ. Linn. Soc. xiv. 548; Kew Bulletin, 1887, May, 7 and 3, fig. 2; Engl. Pfl. Ost-Afr. C. 144, t. 5, figs. G-H.

Upper Guinea. Fernando Po, *Mann,* 1169!

Nile Land. British East Africa: Niamniam; Damvo Hill, *Schweinfurth,* 3831!

Lower Guinea. Congo, *Smith!* Angola: Ambriz, *Monteiro!*

Mozamb. Dist. Usambara, Zanzibar and the Zambesi Region (ex *Engler*).

6. **S. Kirkii,** *Baker in Kew Bulletin,* 1887, *May,* 8 *and* 3, *fig.* 3. Leaves not more than 3–4 to a tuft, oblanceolate, 3 ft. long. 3 in. broad at the middle, narrowed gradually to 1 in. at the base, very rigid, flat in the upper half when mature, channelled in the lower half, 1 in. thick, and subterete with a rounded facial groove at the base, obscurely mottled with white, with a narrow red-brown marginal line. Peduncle much shorter than the leaves; lower empty bracts large, ovate. Raceme short, dense; flowers about 6 to a bract; pedicels $\frac{1}{3}$–$\frac{1}{2}$ in. long, Perianth 5–6 in. long; lobes $1\frac{1}{2}$ in. long. Stamens as long as the perianth-lobes. Style considerably exserted.—Bot. Mag. t. 7357.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, *Buchanan,* 105!

Introduced into cultivation by Sir John Kirk in 1881. It flowered at Kew for the first time in 1893.

There are in the Kew Herbarium leaves of the same or a nearly allied plant collected by Sir John Kirk at Lupata in 1860.

7. **S. Volkensii,** *Gürke in Engl. Pfl. Ost-Afr. B.* 367; *C.* 144. Rootstock wide-creeping, much-branched. Leaves semiterete, rigid, $1\frac{1}{2}$ ft. long, $\frac{1}{3}$–$\frac{1}{2}$ in. diam., channelled down the face, rounded on the back, green, sometimes blotched with white, narrowed gradually to the semi-pungent apex. Peduncle as long as or shorter than the leaves. Inflorescence a simple raceme. Perianth white, at most 1 in. long.

Mozamb. Dist. German East Africa: Usambara, *Holst,* 4080; Kilimanjaro; at Lake Chala, 3700 ft., *Volkens,* 1779!

No specimen in the Kew Herbarium.

8. **S. Ehrenbergii,** *Schweinf. ex Baker in Journ. Linn. Soc.* xiv. 549. Rootstock woody, wide-creeping. Leaves 12–15 in a distichous rosette; rudimentary outer ones small, ovate; central subterete, very rigid, reaching a length of 5–6 ft., $1\frac{1}{2}$ in. broad and thick, with an acute groove down the face, many slight grooves down the rounded back and

spreading acute edges, with a narrow line of red-brown and white. Peduncle with panicle 5–6 ft. long. Inflorescence a deltoid panicle with many ascending branches; flowers many in a cluster; pedicels $\frac{1}{6}$–$\frac{1}{8}$ in. long, articulated at the apex; bracts minute, deltoid, membranous. Perianth $\frac{1}{2}$–$\frac{3}{4}$ in. long, white, tinged with red; lobes longer than the tube. Stamens as long as the perianth-lobes. Style finally exserted.—Schweinf. in Bull. Herb. Boiss. ii., App. ii. 78; Oliv. in Hook. Ic. t. 2269; Engl. Pfl. Ost-Afr. C. 144, t. 6.

Nile Land. Nubia: between Atbara and the Red Sea, *Schweinfurth*, **31**! Eritrea: Mount Alamkale, near Aidereso, *Schweinfurth & Riva*, 1468! Aidereso, *Schweinfurth & Riva*, 1835! Somaliland, *Stace!*

Also Arabia, in the province of Yemen, described as a doubtful *Dracæna* by Deflers (Voy. Yemen, 211).

For information as to its uses, see Kew Bulletin, 1892, 129, and Schweinf. Pianti utili dell' Eritrea, 30.

9. **S. Schimperi,** *Baker*. Leaves subcylindrical, very rigid, with a clasping ovate base, 3 ft. long, $\frac{1}{2}$–$\frac{3}{4}$ in. diam., narrowed gradually to the apex, with a small rounded groove down the face, and fine smaller grooves down the back and sides, the spaces between the grooves rounded. Inflorescence and perianth unknown. Intermediate between *S. cylindrica* and *S. Ehrenbergii*.

Nile Land. Somaliland, *Stace! MacConkey!*

10. **S. cylindrica,** *Bojer, Hort. Maurit.* 349 (*name only*). Rootstock wide-creeping, as thick as a man's finger. Leaves 3–5 to a node, terete, with an ovate concave clasping base, reaching sometimes a length of 5–6 ft., about 1 in. in diam. at the middle, narrowed gradually to the point, marked with about five vertical grooves. Primordial leaves flat. Peduncle 1–1$\frac{1}{2}$ ft. long. Raceme moderately dense, 1$\frac{1}{2}$–2 ft. long; bracts minute, scariose; flowers many in a cluster; pedicels very short, articulated at the middle. Perianth white, 1–1$\frac{1}{4}$ in. long; lobes as long as the slender tube. Stamens as long as the perianth-lobes. Style shortly exserted.—Hook. in Bot. Mag. t. 5093; Baker in Journ. Linn. Soc. xiv. 549; Kew Bulletin, 1887, May, 9 and 3, fig. 6; Schweinf. in Bull. Herb. Boiss. ii., App. ii. 77; Engl. Pfl. Ost-Afr. C. 144, t. 5, fig. P. *S. angolensis*, Welw. ex Baker in Journ. Linn. Soc. xiv. 549.

Nile Land. Eritrea: below Geleb on the Upper Lawa River, 5200 ft., *Schweinfurth*, 1833, 1886; Arbaroba, 5800 ft., *Schweinfurth*, 830. Aidereso, 4000 ft., *Schweinfurth*, 1468. British East Africa: Rabai Hills, near Mombasa, *Taylor!*

Lower Guinea. Lower Congo, *Laurent!* Angola, *Welwitsch*, 3749! Amboland, *Schinz*, 1009!

Mozamb. Dist. Matabeleland: Mangwe River, *Baines!*

11. **S. sulcata,** *Bojer ex Baker in Journ. Linn. Soc.* xiv. 549 (*in syn.*). Leaves few to a tuft, terete, 2–3 ft. long, nearly 1 in. diam. at the middle, dull green, not mottled, tapering gradually to an almost pungent point, marked from the apex to the base with 5 distinct

grooves; facial groove rather deeper than the others; laterals also a little deeper than the dorsal. Primordial leaves terete. Flowers unknown.—Kew Bulletin, 1887, May, 10 and 3, fig. 7.

Locality not known with certainty; probably the coast of German East Africa. The above description is taken from the living plant at Kew. A plant received from Lamu Island, British East Africa, from Mr. R. M. Ormerod in 1896, differs in having leaves $1\frac{1}{2}$ in. diam.

12. **S. grandicuspis,** *Haw. Syn. Succ.* 67. Leaves many to a tuft, lanceolate, flat, thicker than in *S. guineensis*, 9–12 in. long, 1–$1\frac{1}{4}$ in. broad at the middle, slightly channelled down the lower half of the face, obscurely mottled, not red on the margin, furnished on the back from the top to the bottom with 5–7 distinct vertical grooves, tipped with a distinct subulate cusp $\frac{1}{4}$–$\frac{1}{2}$ in. long. Flowers not seen.—Kunth, Enum. v. 20.

Native country not known. Described from a living plant in the Kew collection, March 1896.

Dr. Schinz (Bull. Herb. Boiss. iv. App. iii. 45) refers doubtfully a plant collected by himself in Amboland to *S. thyrsiflora*, Thunb., which is widely spread in South Africa.

2. CYANASTRUM, Oliv. in Hook. Ic. t. 1965.

Perianth corolline, with a short tube and 6 equal spreading oblong lobes. Stamens 6, all perfect, inserted at the base of the perianth-lobes; filaments filiform; anthers linear, basifixed, dehiscing by two terminal pores. Ovary globose, half inferior, 3-celled; ovules 2 in each cell, collateral, erect; style long, filiform; stigma capitate, faintly 3-lobed. Fruit and seeds unknown.

Endemic.

1. **C. cordifolium,** *Oliv. in Hook. Ic. t.* 1965. Corm solid, globose, $\frac{1}{2}$ in. diam. Leaves arising singly from the corm on long petioles, cordate-ovate, acute, glabrous, membranous, 3–6 in. long, with arcuate main veins arising from the apex of the petiole and reticulated intermediate veinlets. Peduncle 4–6 in. long, with a laxly sheathing bract-leaf from the base and another larger from the middle. Raceme lax, 2–3-flowered; pedicels short, erecto-patent; bracts oblong, membranous, persistent. Perianth blue, $\frac{1}{3}$–$\frac{1}{2}$ in. long. Stamens rather shorter than the perianth; filaments as long as the anthers.

Upper Guinea. Lagos: interior of Yoruba, *Millson*, 89! Sent to Kew alive by *Millen*. Cameroons: near the shore, *Kalbreyer*, 89! Ambas Bay, *Mann*, 769!

Lower Guinea. Gaboon: Sierra del Crystal, *Mann*, 1644! Mfoa, *Bates*, 540!

There are in the Kew Herbarium incomplete specimens of a second species (*C. Johnstoni*, Baker), collected by Sir H. Johnston in 1889, on the hills between Lakes Tanganyika and Nyasa, at an elevation of 5000 feet. Of this the flowers are rather larger and about six in a raceme, with deciduous bracts, and the stem has a linear membranous bract-leaf at or below the middle. The leaves are said to be ample, and the flowers blue.

ORDER CXXXVI. **IRIDEÆ.** (By J. G. Baker.)

Flowers hermaphrodite, regular or irregular. Perianth corolline, with or without a tube above the ovary; segments biseriate, all alike or those of the inner row different from those of the outer, or the three lower from the three upper. Stamens 3, inserted opposite the segments of the outer row, divergent or unilateral; filaments free, or more or less united; anthers basifixed or dorsifixed, with longitudinal extrorse or lateral dehiscence. Ovary inferior, 3-celled; ovules anatropous, few or many in a cell, superposed; style filiform, usually 3-furcate; branches simple or forked, very various in structure. Fruit a capsule with loculicidal dehiscence. Seeds globose or flattened; testa membranous; embryo small, placed in the middle of the horny albumen near the hilum.—Root fibrous. Rootstock a rhizome or tunicated corm. Leaves often but not invariably distichous and concentrated at the base of the stem. Flowers one or several to a spathe, various in colour, often fugitive.

Species about 700, concentrated in South Africa, spread also principally through the temperate and subtemperate zones of both hemispheres.

TRIBE I. **Moraeeæ.**—*Stamens placed opposite the style-branches. Flowers usually more than one to a spathe.*

Style-branches furnished with 2 petaloid crests with a transverse stigma at their base.
- Peduncle terete. Inner segments of the perianth not convolute . . . . . 1. MORÆA.
- Peduncle flat. Inner segments of the perianth convolute . . . . . 2. MARICA.

Stigma terminal on the laciniated style-branches . . 3. FERRARIA.

TRIBE II. **Sisyrinchieæ.**—*Stamens alternate with the style-branches. Flowers not spicate.*

- Spathes 1-flowered . . . . . 4. ROMULEA.
- Spathes many-flowered . . . . . 5. ARISTEA.

TRIBE III. **Ixieæ.**—*Stamens alternate with the style-branches. Flowers spicate, always solitary in the spathes.*

Stamens divergent, equilateral.
- Spathe-valves herbaceous, green . . . . 6. HESPERANTHA.
- Spathe-valves membranous . . . . . 7. DIERAMA.

Stamens contiguous, unilateral, arcuate.
- Style-branches bifid . . . . . 8. LAPEYROUSIA.
- Style-branches simple.
  - Spathes short.
    - Capsule few-seeded, inflated . . . . 9. CROCOSMIA.
    - Capsule many-seeded, not inflated . . . 10. TRITONIA.
  - Spathes long.
    - Perianth segments subequal . . . . 11. ACIDANTHERA.
    - Perianth segments unequal.
      - Perianth-tube funnel-shaped . . . . 12. GLADIOLUS.
      - Perianth-tube suddenly dilated at the middle . 13. ANTHOLYZA.

1. **MORÆA,** Linn.; Benth. et Hook. f. Gen. Plant. iii. 688.

Perianth-tube obsolete; outer segments obovate-unguiculate, spreading from about the middle; inner erect, generally narrower. Stamens inserted at the base of the outer segments of the perianth opposite the branches of the style; filaments filiform, generally united at the base; anthers linear, basifixed. Ovary cylindric-trigonous, 3-celled; ovules many in a cell; style-branches petaloid, with two lanceolate or deltoid petaloid crests; stigma at the base of the crests. Capsule oblong-trigonous. Seeds globose.—Rootstock usually a corm, rarely a rhizome. Leaves linear or ensiform, few or many. Stem simple or branched. Outer spathe-valves firm, green. Flowers 2 or more in each spathe, various in colour, often fugacious.

Species 60, the others South African, with only one in Australia.

*Eumoræa. Rootstock a tunicated corm.

Stem simple.
- Flowers small . . . . . 1. *M. gracilis.*
- Flowers large.
  - Produced leaf basal.
    - Leaf very narrow . . . . . 2. *M. Mechowii.*
    - Leaf $\frac{1}{4}$ in. broad . . . . . 3. *M. diversifolia.*
    - Leaf $\frac{1}{2}$ in. broad.
      - Stem without rudimentary leaves . . . 4. *M. Welwitschii.*
      - Stem with 1–2 rudimentary leaves . . 5. *M. zambesiaca.*
    - Leaf $\frac{3}{4}$–1 in. broad . . . . . 6. *M. macrantha.*
  - Produced leaf supra-basal.
    - Leaf subterete . . . . . 7. *M. angusta.*
    - Leaf $\frac{1}{4}$ in. broad . . . . . 8. *M. ventricosa.*
    - Leaf $\frac{1}{3}$–$\frac{1}{2}$ in. broad . . . . . 9. *M. textilis.*

Stems branched.
- Inflorescence spicate . . . . . 10. *M. Thomsoni.*
- Inflorescence racemose . . . . . 11. *M. Carsoni.*
- Inflorescence corymbose.
  - Flowers yellow.
    - Stem with only a rudimentary leaf from the middle . . . . . 12. *M. spithamæa.*
    - Stem with a produced leaf from the middle . 13. *M. andongensis.*
  - Flowers lilac.
    - Leaves $\frac{1}{4}$ in. broad . . . . . 14. *M. Candelabrum.*
    - Leaves $\frac{1}{2}$ in. broad . . . . . 15. *M. glutinosa.*

**Dietes. Rootstock a rhizome.

The only species . . . . . 16. *M. iridioides.*

1. **M. gracilis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 272. Corms globose, tufted, $\frac{1}{2}$–$\frac{3}{4}$ in. diam.; outer tunics fine, brown, fibrous, produced above the neck. Produced leaves 2, terete, basal, erect, very slender, shorter than the stem. Stem slender, simple, 8–15 in. long, with a rudimentary leaf from above the middle. Spathe cylindrical, 2–2$\frac{1}{2}$ in. long; outer valve much shorter than the inner. Perianth yellow, fugacious, under 1 in. long; inner segments but little

narrower than the outer. Style-branches with crests a little shorter than the perianth. Capsule oblong, $\frac{1}{3}$ in. long.—Baker, Handb. Irid. 51; Engl. Hochgebirgsfl. Trop. Afr. 173.

Lower Guinea. Angola: Huilla; in sandy pastures near Lopollo, 3800–5500 ft., *Welwitsch*, 1545!

2. **M. Mechowii,** *Pax in Engl. Jahrb.* xv. 151. Stem simple, terete, above 1 ft. long, with several rudimentary leaves. Produced leaf 1, narrowly linear, basal, as long as the stem, $\frac{1}{10}$ in. broad. Spathe 2 in. long; outer valve shorter than the inner. Perianth 2 in. long; outer segments obovate-unguiculate, violet-purple with a yellow blotch at the base of the blade, nearly 1 in. broad; inner segments narrower, erect, violet-purple. Style-branches violet-purple, nearly as long as the perianth-segments.

Lower Guinea. Angola: Catala Canginga, *Teuscz*, 557.

No specimen in the Kew Herbarium.

3. **M. diversifolia,** *Baker in Journ. Linn. Soc.* xvi. 130. Corm globose, 1 in. diam., with brown rigid outer tunics produced 2–3 in. above its neck. Produced leaf 1, rigid, linear, basal, $\frac{1}{4}$ in. broad. Stem simple, $\frac{1}{2}$–1 ft. long, with several rudimentary leaves. Spathe 3 in. long; valves acuminate, the outer rather shorter than the inner. Perianth lilac, $1\frac{1}{2}$ in. long; outer segments obovate-unguiculate, under $\frac{1}{2}$ in. broad, spreading from halfway down; inner oblanceolate, erect. Style-branches half as long as the perianth; crests large, lanceolate. Capsule oblong, $\frac{3}{4}$ in. long.—Baker, Handb. Irid. 52; Engl. Hochgebirgsfl. Trop. Afr. 172.—*Iris diversifolia*, Steud. ex A. Rich. Tent. Fl. Abyss. ii. 305. *Hymenostigma tridentatum* and *H. Schimperi*, Hochst. in Flora, 1844, 24–25. *Xiphion diversifolium*, Klatt in Linnæa, xxxiv. 572. *Vieusseuxia tridentata* and *V. Schimperi*, Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 305.

Nile Land. Abyssinia: Semen; mountain meadows near Enjedcap, *Schimper*, 1173! Mount Bachit, near Barnam, *Schimper*, 1296!

4. **M. Welwitschii,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 270. Corm globose, 1 in. diam.; tunics brown, scariose, produced 4–5 in. above its neck. Leaf 1, basal, linear, rigid, flat, glabrous, $1\frac{1}{2}$–2 ft. long, $\frac{1}{2}$ in. broad. Stem simple, 1 ft. long, without rudimentary leaves. Spathe 3–4 in. long; valves acute, subequal. Ovary cylindrical, 1 in. long. Perianth dark lilac-purple, 2 in. long; outer segments obovate-spathulate, $\frac{1}{2}$ in. broad, spreading from the middle; inner not much narrower, erect. Style-branches 1–$1\frac{1}{4}$ in. long; crests large, lanceolate. Capsule oblong, $1\frac{1}{4}$ in. long.—Baker, Handb. Irid. 51; Engl. Hochgebirgsfl. Trop. Afr. 173.

Lower Guinea. Angola: Huilla; temperate region, in swamps near the Lopollo Brook, *Welwitsch*, 1548!

5. **M. zambesiaca,** *Baker in Journ. Linn. Soc.* xvi. 130. Corm not seen. Produced leaf 1, linear, glabrous, firm, basal, 1–$1\frac{1}{2}$ ft. long,

½ in. broad at the middle. Stem simple, about 1 foot long, with 1–2 rudimentary sheathing leaves. Spathe cylindrical, 3–4 in. long; outer valve a little shorter than the inner. Perianth lilac-purple, 1½–2 in. long; outer segments obovate-unguiculate, ¾–1 in. broad, spreading from the middle; inner erect, about ½ in. broad. Style-branches half as long as the perianth; crests long, lanceolate. Capsule cylindrical, above 1 inch long.—Baker, Handb. Irid. 51.

Lower Guinea. Angola: Huilla; Humpata, *Johnston!* Cunene River, *Johnston!* Lower Congo: Katanga, *Cornet!*

Mozamb. Dist. German East Africa: Livingstone Range, *Johnson!* Higher Plateau, North of Lake Nyasa, *Thomson!* between Lake Nyasa and Lake Tanganyika, 6000–8000 ft., *Thomson!* Portuguese East Africa: Makua; Namuli Hills, *Last!* British Central Africa: Nyasaland; Shibisa (Chikwawa) to Tshinmuze, 2000–4000 ft., *Kirk!* Mount Zomba, *Buchanan,* 143! Manganja Hills, 3000 ft., *Meller!* near Mount Sochi, 3000 ft., *Kirk!* Mount Mlanje, *McClounie,* 13!

6. **M. macrantha,** *Baker.* Corm stout. Radical leaves 5–6 to a stem, ensiform, not rigid nor strongly veined, 1½–2 ft. long, ¾–1 in. broad. Stem terete, erect, 2 ft. long, bearing 5–6 sheath-leaves and a single terminal cluster of flowers. Spathe cylindrical, 3–4 in. long; valve firm, pale green, the inner much longer than the outer. Ovary clavate, ¾ in. long. Perianth bright lilac, 2½ in. long; outer segments obovate-unguiculate, 1 in. broad, reflexing from half-way; inner oblong-unguiculate, erect, ¾ in. broad. Style crests large, deltoid.

Mozamb. Dist. British Central Africa: Nyasaland, *Whyte!*

7. **M. angusta,** *Ker in Bot. Mag. t.* 1276. Corm globose, 1 in. diam.; tunics of many thick wiry strands, often produced as bristles above its neck. Produced leaf 1, springing from a little above the base of the stem, subterete, 1½–2 ft. long, deeply channelled down the face. Stem simple, 1–1½ ft. long, with 1–2 rudimentary sheathing leaves. Spathe cylindrical, 3 in. long; outer valve acute, much shorter than the inner. Perianth pale yellow, 1½ in. long; outer segments obovate, unguiculate, above ½ in. broad, reflexing from half-way down; inner erect, not much narrower. Style-branches half as long as the perianth; crests large, lanceolate. Ovary cylindrical, ½ in. long.—Baker in Journ. Linn. Soc. xvi. 130; Handb. Irid. 50. *Iris angusta,* Thunb. Diss. Irid. 19.

Mozamb. Dist. British Central Africa: Urungu; Tanganyika Plateau at Fwambo, type and a variety with lilac flowers, *Carson!* Nyasaland; Fort Hill, *Whyte!*

Also in South Africa.

8. **M. ventricosa,** *Baker in Kew Bulletin,* 1895, 73. Corm not seen. Produced leaf 1, arising from the stem a little above the base, linear, thick, rigid, 2 ft. long, ¼ in. broad. Stem 1 ft. long, simple, with several sheathing rudimentary leaves. Spathe ventricose, 3½–4 in. long; outer valve cuspidate, much shorter than the other. Perianth pale yellow, 2 in. long; outer segments obovate, with a long claw, ½ in.

broad; inner a little narrower. Style-branches half as long as the perianth; crests deltoid. Ovary cylindrical, 1 in. long.

Mozamb. Dist. British Central Africa: Urungu; Fwambo, *Carson*, 37 of 1894 collection!

9. **M. textilis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 270. Corm depresso-globose, 1½–2 in. diam., with fibrous tunics produced above its neck. Produced leaf 1, spreading from several inches above the base, firm, linear, glabrous, strongly ribbed, reaching a length of 4–5 ft., ⅜–½ in. broad. Stem simple, 2–3 ft. long, bearing several rudimentary leaves. Spathe 4–5 in. long; outer valve shorter than the inner. Ovary 1 in. long. Perianth dark purple, 2½–3 in. long; outer segments obovate-unguiculate, ½ in. broad, reflexing from above the middle; inner erect, emarginate. Style-branches 1½ in. long; crests large, lanceolate.—Baker, Handb. Irid. 52; Engl. Hochgebirgsfl. Trop. Afr. 173.

Lower Guinea. Angola: Huilla; on hills by the Lopollo Brook, among bushes in damp places, 3800–5500 ft., *Welwitsch*, 1549!

10. **M. Thomsoni,** *Baker, Handb. Irid.* 57. Corm not seen. Stem-leaves reduced to sheaths, with short erect free points. Stem including inflorescence 1 ft. long, bearing 2–5 remote spicate clusters of flowers; spathe cylindrical, 1–1½ in. long; outer valve longest. Perianth fugitive, light blue, ¾ in. long; outer segments spreading from half-way down. Style-crests short. Capsule oblong, ⅓ in. long.

Mozamb. Dist. German East Africa: Higher plateau north of Lake Nyasa, *Thomson!* British Central Africa: Nyasaland; Mount Malosa, 4000–6000 ft., *Whyte!*

11. **M. Carsoni,** *Baker in Kew Bulletin*, 1894, 391. Corm not seen. Produced leaf 1 from the middle of the stem, narrowly linear, erect, rigid, glabrous, strongly ribbed, a foot long, $\frac{1}{12}$ in. broad. Stem very slender, 1½ ft. long, bearing about 4 clusters of flowers, the lateral on very short ascending peduncles. Spathe cylindrical, 1¼–1½ in. long; outer valve acuminate, much shorter than the inner. Perianth purple, fugitive, under 1 in. long; outer segments obovate-unguiculate, ¼ in. broad; inner narrower, oblanceolate. Style-branches ½ in. long; crests lanceolate. Capsule oblong, ¼ in. long.

Mozamb. Dist. British Central Africa: Urungu; Fwambo, *Carson!*

12. **M. spithamæa,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 271. Corm globose, ¼–½ in. diam. Stem ½ ft. long, branched in the upper half, viscous below the nodes and spathes, with 2 rudimentary leaves below the inflorescence. Produced leaves not seen. Inflorescence corymbose, with ascending peduncles 1–1½ in. long. Spathes 1–1¼ in. long; outer valve oblong, obtuse, considerably shorter than the inner. Perianth yellow, fugacious, under 1 in. long; outer segments obovate-cuneate, spotted with black; inner nearly as broad. Style-branches

with crests nearly as long as the perianth. Ovary turbinate, $\frac{1}{6}$ in. long. —Baker, Handb. Irid. 55.

Lower Guinea. Angola: Huilla; subtemperate region, in sandy thickets at Lopollo and Humpata, *Welwitsch*, 1567!

13. **M. andongensis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 271. Corm small, globose. Stem slender, $\frac{1}{2}$ ft. long, branched in the upper half, viscous below the nodes. Produced leaves 3–4, basal and suprabasal, narrowly linear, rigid, glabrous, 6–15 in. long, $\frac{1}{12}$ in. broad. Inflorescence corymbose; peduncles ascending, 1–3 in. long; spathes $\frac{3}{4}$–1 in. long; outer valve much shorter than the inner. Perianth sulphur-yellow, fugacious, $\frac{1}{2}$ in. long; segments nearly equal in width. Style-branches with crests nearly as long as the perianth. Capsule depresso-globose, $\frac{1}{4}$–$\frac{1}{3}$ in. diam.—Baker, Handb. Irid. 55.

Lower Guinea. Angola: Pungo Andongo; in damp wooded meadows at Montollo, 2400–3800 ft., *Welwitsch*, 1532!

14. **M. Candelabrum,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 271. Corm small, globose. Stem much-branched, 2–3 ft. long, viscous below the nodes. Leaves many, 2 basal and others cauline, linear, glabrous, moderately firm, $\frac{1}{4}$ in. broad, the lower above a foot long. Inflorescence corymbose; peduncles ascending, 1–3 in. long; spathes 1–$1\frac{1}{2}$ in. long; outer ovate $\frac{1}{4}$–$\frac{1}{3}$ in. long. Perianth fugitive, lilac, about 1 in. long; segments nearly equal in breadth. Style-branches with their crests not much shorter than the perianth. Capsule small, turbinate.—Baker, Handb. Irid. 54; Engl. Hochgebirgsfl. Trop. Afr. 173.

Lower Guinea. Angola: Huilla; among shrubs in stony ground at Morro de Lopollo, 5200 ft., *Welwitsch*, 1544!

15. **M. glutinosa,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 271. Corm irregular, $\frac{3}{4}$–$1\frac{1}{2}$ in. diam. Leaves of the sterile rosette linear, firm, glabrous, 1 ft. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad. Stem $1\frac{1}{2}$ ft. long, branched from below the middle; rudimentary leaves subtending the branches, lanceolate, 2–4 in. long; stem very viscous below the nodes; peduncles long, ascending. Spathes 1–$1\frac{1}{4}$ in. long; outer valve obtuse, rather shorter than the inner. Perianth lilac-purple, fugacious, 1 in. long; outer segments $\frac{1}{3}$ in. broad. Style-branches with crests nearly as long as the perianth. Ovary clavate, $\frac{1}{6}$ in. long.—Baker, Handb. Irid. 55.

Lower Guinea. Angola: Huilla; subtemperate region, among shrubs on hills near Lopollo, *Welwitsch*, 1543!

16. **M. iridioides,** *Linn. Mant.* 28. Rhizome short, creeping. Leaves several in a fan-shaped basal rosette, ensiform, green, firm, 1–2 ft. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad. Stems 1–2 ft. long, with many sheath-leaves, sometimes elongated and rooting. Inflorescence laxly corymbose; spathes cylindrical, $1\frac{1}{2}$–2 in. long; valves firm, not pointed; outer valve small. Perianth white, 1–2 in. long; segments of both rows spreading; outer obovate-cuneate, with a finely pilose claw and a yellow keel at the base; inner narrower, pure white. Style-crests large,

lanceolate. Capsule oblong, 1–1½ in. long.—Jacq. Hort. Schoenbr. t. 196 (excl. syn.); Ker in Bot. Mag. t. 693; Baker, Handb. Irid. 60. *M. vegeta*, Miller, Gard. Dict. edit. viii. (Ic. t. 239, fig. 1), not Linn. *Iris compressa*, Linn. f. Suppl. 98; Baker in Journ. Linn. Soc. xvi. 147. *I. morœoides*, Ker in Bot. Mag. sub t. 1407. *I. crassifolia*, Lodd. Bot. Cab. t. 1861. *Dietes iridifolia*, Salisb. in Trans. Hort. Soc. i. 307. *D. iridioides*, Sweet, Hort. Brit. edit. ii. 497. *D. compressa*, Klatt in Linnæa, xxxiv. 584.

Mozamb. Dist. German East Africa: Valley of the River Umba, *Smith!* British Central Africa: Nyasaland; Mount Malosa, 4000–6000 ft., *Whyte!* by the Mwata Manga Rivulet, 4000 ft., *Kirk!*

Also widely spread in South Africa.

2. **MARICA**, Ker; Benth. et Hook. f. Gen. Pl. iii. 689.

Perianth without any tube above the ovary; segments of the two rows very different in shape; outer obovate, spreading; inner smaller, convolute vertically. Stamens placed opposite the branches of the style; filaments free; anthers linear, basifixed. Ovary 3-celled; ovules many, superposed; style subulate at the base, cup-shaped in the upper half, with 3 angles to which the stamens loosely adhere; crests petaloid, with a transverse stigma at the base. Capsule oblong, loculicidally 3-valved. Seeds globose or angled by pressure.—Rootstock a short rhizome. Leaves ensiform, distichous, flabellate. Peduncle flattened, with one or few clusters of flowers; spathe-valves rigid or scariose. Flowers very fugitive, blue, white, or yellow.

Species about 10, the others Tropical American.

1. **M. Sabini,** *Lindl. in Trans. Hort. Soc.* vi. 75, *t.* 1. Leaves 6–8 in a tuft, ensiform, distichous, 2–3 ft. long, bright green, 1–1½ in. broad, tapering to the point. Peduncle as broad as the leaves, similar in texture, bearing 2–3 clusters of flowers from the side a long way below its apex. Spathes 2–2½ in. long; outer valves firm, green. Outer segments of the perianth 2 in. long, bright blue, the base with brown spots on a yellow ground; inner segments similarly coloured, reflexed at the tip, not more than half as long as the outer —Lodd. Bot. Cab. t. 1164; Baker, Handb. Irid. 61. *M. sabiniana*, Herb. in Bot. Mag. sub t. 3809.

Upper Guinea. Fernando Po, *Don.*

Lower Guinea. Princes Island, *Barter*, 2015! Angola, *Curror!*

Is probably only a form of the Brazilian *M. cœrulea*, Ker, and introduced.

3. **FERRARIA,** Linn.; Benth. et Hook. f. Gen. Pl. iii. 692.

Perianth-segments united at the base, connivent above it, subequal, spreading, acute, more or less convolute. Stamens placed opposite the branches of the style; filaments united or connivent in a cylindrical

tube; anthers small, ovate or oblong. Ovary cylindrical, rostrate, 3-celled; ovules many, superposed; style filiform, its branches bifid or flattened at the densely fimbriated apex. Capsule oblong, 3-valved. Seeds subglobose.—Rootstock a large irregularly shaped corm. Leaves long, linear. Stem often branched, furnished with many ovate clasping reduced leaves. Spathe-valves firm, green. Flowers fugitive, usually greenish or purplish-black.

Species 7, the others South African.

Perianth segments yellow, panduriform . . .	1. *F. Welwitschii.*
Perianth segments red, oblanceolate	2. *F. bechuanica.*

1. **F. Welwitschii,** *Baker, Handb. Irid.* 74. Stems slender, under a foot long, branched below the middle, bearing 4 clusters of flowers on long ascending peduncles. Stem-leaves linear, distantly superposed, the longest 3–4 in. long. Spathes cylindrical, 1½ in. long; outer valve shorter than the next. Flowers bright yellow; segments subequal, 1 in. long, with a spreading panduriform acute blade, copiously blotched with brown up to the tip, longer than the broad claw. Staminal column shorter than the claw; anthers oblong, just overtopped by bifid laciniated tips of the style-branches.

Lower Guinea. Angola, *Welwitsch.*

Described from a drawing of a plant that flowered in the garden of Mr. Wilson Saunders at Reigate in July 1871, the corm of which was sent to him by Dr. Welwitsch.

2. **F. bechuanica,** *Baker.* Stem stout, erect, glabrous, 2–3 ft. long, forked three times, bearing short linear strongly-ribbed glabrous leaves from the forks and a long erect one from the base. Spathes 3–6-flowered, cylindrical, 1½–2 in. long; valves rigid, light green; outer valve very short. Perianth-segments oblanceolate, ¾ in. long, dark red-brown and green. Filaments united in a cylindrical tube, ¼ in. long; anthers small, oblong, yellow, spreading from its top. Style-branches short, bifid, densely penicillate; hairs brown. Capsule oblong, substipitate, ¾ in. long, narrowed to the base.

Mozamb. Dist. Ngamiland: Kalahari Desert, near Mamunwe, *Lugard,* 237!

4. **ROMULEA,** Maratti; Benth. et Hook. f. Gen. Pl. iii. 694.

Perianth with a short tube and 6 obovate imbricate subequal segments. Stamens alternate with the style-branches; filaments inserted at the throat of the perianth-tube, free in the tropical African species; anthers lanceolate-sagittate. Ovary oblong, 3-celled; ovules many, superposed; style filiform, with bifid clavate branches. Capsule oblong, loculicidally 3-valved. Seeds globose or angled by pressure.—Rootstock a small corm, with membranous tunics. Leaves setaceous, multifarious. Spathe of 2 lanceolate valves; outer or both firm, green, lanceolate. Flowers various in colour, only one to a spathe.

Species 30–40, all nearly allied and similar in habit, many in South Africa, and several in the Mediterranean Region.

Style not overtopping the anthers.	
Peduncle short, simple or branched. Perianth-segments oblong, acute	1. *R. ramiflora.*
Peduncle long, simple. Perianth-segments oblanceolate, obtuse.	
Perianth plain purple	2. *R. camerooniana.*
Perianth conspicuously striped	3. *R. campanuloides.*
Style overtopping the anthers	4. *R. Fischeri.*

1. **R. ramiflora,** *Ten. Mem.* 113. Corm globose, under $\frac{1}{2}$ in. diam.; tunics firm, castaneous. Leaves very slender, subterete, 5–6 in. long, erect or arcuate, channelled down the face. Peduncle 2–3 in. long, simple or branched, with a reduced leaf at the fork. Spathe-valves equal, acute, $\frac{1}{3}$–$\frac{1}{2}$ in. long, green or brownish. Perianth plain purple, $\frac{1}{2}$–$\frac{5}{8}$ in. long; segments oblong, acute. Stamens about half as long as the perianth-limb. Style not overtopping the anthers.—Moggr. Cont. Flora Mentone, t. 92. *R. Linaresii,* Baker in Journ. Linn. Soc. xvi. 87; Engl. Hochgebirgsfl. Trop. Afr. 172.

Nile Land. Abyssinia: Semen; Mount Bachit, *Schimper,* 550!
Also in the Mediterranean Region.

2. **R. camerooniana,** *Baker in Journ. Bot.* 1876, 236. Bulb globose, $\frac{1}{3}$–$\frac{3}{4}$ in. diam.; tunics brown, rigid, produced as fibres above its neck. Leaves very slender, terete, 1 ft. long, channelled down the face. Peduncle very slender, stiffly erect, 6–9 in. long, 1-flowered. Spathe-valves equal, about $\frac{1}{2}$ in. long, both firm and green. Perianth $\frac{3}{4}$ in. long, plain purple with a white throat; segments oblanceolate, obtuse. Stamens more than half as long as the perianth limb. Style not overtopping the anthers.—Baker, Handb. Irid. 102, ex parte; Engl. Hochgebirgsfl. Trop. Afr. 172, partly.

Upper Guinea. Cameroons: Mountains at 7000–9000 ft., *Mann,* 2135! *Johnston,* 19!

3. **R. campanuloides,** *Harms in Engl. Jahrb.* xix. *Beibl. No.* 47, 28. Bulb globose, $\frac{1}{3}$–$\frac{1}{2}$ in. diam., tunics brown, rigid. Leaves very slender, subterete, erect, 1 ft. or more long, channelled down the face. Peduncle slender, simple, stiffly erect, 6–9 in. long. Spathe-valve subequal, green, lanceolate, acute, about $\frac{1}{2}$ in. long. Perianth sessile, funnel-shaped, $\frac{3}{4}$–$\frac{7}{8}$ in. long; segments oblanceolate, obtuse, distinctly striped with dark lilac on a paler purple ground. Stamens half as long as the perianth limb. Style not overtopping the anthers.—*R. alpina,* Rendle in Journ. Linn. Soc. xxx. 401. *R. camerooniana,* Baker, Handb. Irid. 102, partly.

Mozamb. Dist. German East Africa: Kilimanjaro, 6000–10,000 ft., *Thomson! Volkens,* 782! *Taylor.*

4. **R. Fischeri,** *Pax in Engl. Jahrb.* xv. 150. Bulb globose, $\frac{1}{4}$ in. diam. Leaves subterete, channelled down the face, overtopping the flowers. Peduncle slender, simple, 4–6 in. long. Spathe-valves lanceo-

late, acuminate, purple outside. Perianth nearly sessile, 1 in. long, purple with a golden-yellow throat; segments subacute, $\frac{1}{5}$ in. broad. Stamens half as long as the perianth. Style overtopping the anthers. —Harms in Engl. Pfl. Ost-Afr. C. 147.

Nile Land. British East Africa: Abori, *Fischer*, 587.

No specimen in the Kew Herbarium.

5. **ARISTEA,** Ker; Benth. et Hook. f. Gen. Pl. iii. 701.

Perianth membranous, with a short cylindrical tube and subequal oblong segments, twisting up spirally after flowering. Stamens inserted at the throat of the perianth-tube; filaments short, free, filiform; anthers erect, linear-oblong. Ovary 3-celled, oblong or cylindrical; ovules many, superposed; style filiform, with 3 small obovate branches, stigmatose round the edge. Capsule oblong or cylindrical, obtusely or acutely angled, loculicidally 3-valved. Seeds globose or angled by pressure.—Herbs with narrow rigid leaves in a distichous basal rosette (the Tropical African species). Peduncle flat or subterete. Flowers clustered, fugitive, usually blue; spathes oblong, the outer valves firm, the inner membranous.

Species 30, the others in South Africa and the Mascarene Islands.

Stem compressed, but not winged.	
Clusters of flowers 1–2	1. *A. johnstoniana.*
Clusters of flowers 4–5	2. *A. zombensis.*
Clusters of flowers 6–8	3. *A. angolensis.*
Stem narrowly winged.	
Stem-leaves 1–2, small	4. *A. nandiensis.*
Stem-leaves 5–6, large	5. *A. nyikensis.*
Stems distinctly winged throughout.	
Clusters of flowers 1–2	6. *A. alata.*
Clusters of flowers 3–4	7. *A. paniculata.*

1. **A. johnstoniana,** *Rendle in Trans. Linn. Soc. ser.* 2, *Bot.* iv. 48. Leaves many in a basal rosette, linear, rigid, 6–10 in. long, $\frac{1}{6}$ in. broad. Peduncle as long as the leaves, slender, compressed but not winged, simple, bearing 1–2 terminal clusters of flowers, leafless or furnished with a single reduced leaf above the middle. Spathe oblong; valves equal, oblong, $\frac{1}{2}$ in. long or the outer longer and acute, green with a scariose margin. Perianth $\frac{1}{3}$ in. long, shortly stipitate. Capsule not seen.

Mozamb. Dist. British Central Africa: Mount Mlanje, *Whyte! McClounie,* 79!

2. **A. zombensis,** *Baker.* Radical leaves 5–6 to a stem, linear, rigid, strongly ribbed, 1 foot long, $\frac{1}{4}$ in broad. Stem above 1 foot long, angled, not winged, bearing 3–4 distant leaves, the upper very small and remote from the flowers. Inflorescence of 4–5 clusters, the lowest with a short erecto-patent peduncle, the others sessile; outer bracts

large, oblong, not lacerated. Perianth-segments narrowly oblong, $\frac{1}{3}$–$\frac{1}{2}$ in. long. Capsule oblong, obtusely angled, subsessile.

Mozamb. Dist. British Central Africa: Nyasaland; Mount Zomba, 4000–6000 ft., *Whyte!*

3. **A. angolensis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 270. Basal leaves many in a rosette, linear, not very rigid, flat, 6–9 in. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad. Peduncle 2 ft. long, compressed, not winged, bearing several reduced leaves. Inflorescence $\frac{1}{2}$–1 ft. long; upper clusters sessile, lower 1–2 on short ascending peduncles. Spathes oblong, $\frac{1}{4}$ in. long; outer valves oblong, obtuse, firm in the lower bract, membranous at the tip. Perianth $\frac{1}{2}$ in. long. Capsule oblong, obtusely angled, sessile, $\frac{1}{4}$ in. long.—Handb. Irid. 141; Engl. Hochgebirgsfl. Trop. Afr. 174.

Lower Guinea. Angola: Huilla; in meadows on the banks of the Lopollo Brook, 4000–5000 ft., *Welwitsch*, 1550!

4. **A. nandiensis,** *Baker.* Leaves linear, rigid, erect, 1 foot or more long, $\frac{1}{4}$ in. broad. Stem erect, 2 ft. long, narrowly winged, bearing 1–2 reduced leaves. Clusters of flowers about 4; peduncle ascending, $\frac{1}{2}$–$1\frac{1}{2}$ in. long; bracts with broad scariose edges, not lacerated. Perianth-segments $\frac{1}{4}$ in. long, twisting spirally. Capsule oblong, obtusely angled, as long as the perianth.

Nile Land. British East Africa: Kavirondo; Nandi Range, 7000–8000 ft., *Scott-Elliot*, 6935!

5. **A. nyikensis,** *Baker.* Stem 1 foot long, flattened and narrowly winged upwards, bearing about 5 distant flat linear glabrous ascending leaves, the lowest 8–9 in. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad. Inflorescence a small thyrsoid panicle with a flattened narrowly-winged peduncle; branches erecto-patent; lower 1 in. long; upper 3 clusters sessile. Flowers not seen. Capsule oblong, obtusely angled, torulose, $\frac{1}{4}$ in. long; pedicel nearly as long as the capsule.

Mozamb. Dist. British Central Africa: Nyasaland; Nyika Plateau, 6000–7000 ft., *Whyte*, 230! between Mpata and the commencement of the Tanganyika Plateau, 2000–3000 ft., *Whyte!*

6. **A. alata,** *Baker in Journ. Linn. Soc.* xxi. 405. Leaves many in a basal rosette, linear, rigid, $\frac{1}{2}$–1 ft. long, $\frac{1}{6}$–$\frac{1}{3}$ in. broad. Peduncle flat and broadly winged throughout, longer than the leaves, usually leafless, rarely bearing 1–2 reduced leaves. Clusters 1–2, the side one smaller than the terminal, nearly sessile or distinctly peduncled. Spathe $\frac{1}{2}$–$\frac{5}{8}$ in. long; outer valves firm in the centre, with a membranous edge and tip. Perianth $\frac{1}{2}$–$\frac{3}{4}$ in. long. Capsule oblong, obtusely angled, distinctly stipitate, $\frac{1}{4}$–$\frac{1}{3}$ in. long.—Handb. Irid. 140. *A. abyssinica*, Pax in Engl. Hochgebirgsfl. Trop. Afr. 173. *A. tayloriana*, Rendle in Trans. Linn. Soc. ser. 2, Bot. iv. 48.

Nile Land. Abyssinia, *Schimper*, 279! British East Africa: Lykipia, 6000–8000 ft., *Thomson!*

Mozamb. Dist. German East Africa: Usambara; Kwa Mshuza (Handei), *Holst*, 9140! Kilimanjaro, 7000–10,000 ft., *Johnston*, 14! *Volkens*, 779! *Taylor!*

7. **A. paniculata,** *Pax in Engl. Jahrb.* xv. 151 (*April* 1892), *not of Baker* (*Aug.* 1892). Leaves many in a basal rosette, firm, linear, ½–1 ft. long, ¼–⅓ in. broad. Peduncle flattened and distinctly winged, ½–1 ft. long below the inflorescence, bearing a single reduced leaf. Inflorescence corymbose; clusters of flowers 3–4; peduncles erecto-patent, narrowly winged, 1–1½ in. long. Spathes oblong, ⅓ in. long; outer valves oblong, obtuse, with a firm centre and brown membranous edge. Perianth ½ in. long. Capsule oblong, obtusely angled, subsessile, ⅓ in. long.—*A. Lastii*, Baker, Handb. Irid. 142 (Aug. 1892).

Mozamb. Dist. Portuguese East Africa: Mukua; Namuli Hills, *Last!*

6. **HESPERANTHA,** Ker; Benth. et Hook. f. Gen. Pl. iii. 702.

Perianth rotate; tube short, cylindrical; segments 6, subequal, oblong, spreading. Stamens inserted at the throat of the perianth-tube, equilateral; filaments filiform; anthers lanceolate, basifixed. Ovary 3-celled; ovules many, superposed; style not longer than the perianth-tube, with 3 long subulate branches. Capsule small, turbinate, loculicidally 3-valved. Seeds small, globose or angled by pressure.—Root-stock a small tunicated corm, with a flat base. Leaves few, narrow, distichous. Flowers in a distichous spike; spathe-valves small, green, generally not longer than the perianth-tube.

Species 27, the others all South African.

Perianth-segments as long as the tube.	
Anthers shorter than the filaments	1. *H. alpina.*
Anthers longer than the filaments	2. *H. petitiana.*
Perianth-segments longer than the tube . . .	3. *H. Volkensii.*

1. **H. alpina,** *Benth. & Hook. f. Gen. Plant.* iii. 703. Corm very small, globose. Produced leaves narrowly linear, sub-basal, firm, erect, glabrous, 3–4 in. long, ⅛–⅙ in. broad. Stems slender, simple, ½–1 ft. long, with a sheathing reduced leaf at the middle. Flowers 2–4 in a lax spike; outer spathe-valve lanceolate, green, ½–1 in. long. Perianth-tube straight, erect, ⅓–½ in. long; segments oblong, as long as the tube, the inner white, the outer claret-red outside. Stamens shorter than the perianth-segments; anthers oblong, shorter than the filaments. Style-branches ¼ in. long. Capsule obovate-oblong, ⅓–½ in. long.—Baker, Handb. Irid. 147; Engl. Hochgebirgsfl. Trop. Afr. 174. *Geissorhiza alpina*, Hook. f. in Journ. Linn. Soc. vii. 223.

Upper Guinea. Cameroons: on mountains at 8000–10,000 ft., *Mann*, 2134! *Johnston*, 18! *Preuss*, 968!

2. **H. petitiana,** *Baker in Journ. Linn. Soc.* xvi. 96. Corm small, globose; tunics rigid, dark brown. Produced leaves 2, suprabasal, linear, flat, erect, moderately firm, glabrous, 6–9 in. long, ⅛ in. broad. Peduncle slender, simple, 1 ft. long, with 1 long-sheathing rudimentary leaf. Flowers few in a lax spike; outer spathe-valve oblong, obtuse,

pale-green, $\frac{1}{2}$–$\frac{3}{4}$ in. long, hiding the inner valve. Perianth-tube slender, erect, $\frac{1}{2}$ in. long; segments oblong, rather shorter than the tube, the inner white, the outer flushed with claret-red on the outside. Anthers $\frac{1}{6}$ in. long; filaments very short. Style-branches $\frac{1}{4}$ in. long. Ovary small, turbinate. — Handb. Irid. 147; Engl. Hochgebirgsfl. Trop. Afr. 174. *Ixia petitiana*, A. Rich. Tent. Fl. Abyss. ii. 309. *Geissorhiza abyssinica*, Klatt in Linnæa, xxxiv. 716, non R. Br.

Nile Land. Abyssinia, *Quartin-Dillon & Petit*, 116!

Var. *uniflora*, Baker. Much dwarfer, with narrower leaves and a single flower.—*Hesperantha uniflora*, Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 309. *Ixia hochstetteriana*, A. Rich. Tent. Fl. Abyss. ii. 309.

Nile Land. Abyssinia: Semen; Mount Bachit, 6000–11,000 ft., *Schimper*, 1239! Begemeder; Mount Guna, 11,000 ft., *Schimper*, 1182!

3. **H. Volkensii,** *Harms in Engl. Jahrb.* xix. *Beibl.* 47, 28. Corm very small, globose. Produced leaves 3, sub-basal, narrowly linear, erect, firm, glabrous, 1 ft. long, 1 lin. broad. Stem very slender, as long as the leaves, with a reduced sheathing leaf at the middle. Flowers about 3 in a very lax spike; outer spathe-valve oblong, green, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Perianth-tube $\frac{1}{2}$ in. long, erect, funnel-shaped in the upper half; segments oblong, $\frac{3}{4}$ in. long, the inner white, the outer tinged with claret-red on the outside. Stamens half as long as the perianth-limb; anthers large, linear. Style-branches $\frac{1}{4}$ in. long.—*H. kilimanjarica*, Rendle in Journ. Linn. Soc. xxx. 402.

Mozamb. Dist. German East Africa: Kilimanjaro; Mamba, 8800 ft., *Volkens*, 783! above Morang, to 10,000 ft., *Taylor!*

7. DIERAMA, K. Koch; Benth. et Hook. f. Gen. Pl. iii. 703.

Perianth-tube short, cylindrical, dilated at the throat; segments 6, subequal, oblong, spreading. Stamens inserted at the throat of the perianth-tube, equilateral; filaments short; anthers linear, basifixed. Ovary oblong, 3-celled; ovules many, superposed; style filiform, exserted from the throat of the perianth-tube, with short spreading entire clavate branches. Capsule oblong, small, membranous, loculicidally 3-valved. Seeds small, globose or angled by pressure.—Rootstock a large corm. Leaves many in a basal rosette, long, linear, rigid, strongly nerved. Flowers in panicled spikes; spathe-valves lanceolate, membranous.

A genus of 2 species, both South African, only one extending into Tropical Africa.

1. **D. pendula,** *Baker in Journ. Linn. Soc.* xvi. 99. Corm large, globose; tunics of parallel fibres produced above its neck. Basal leaves 5–6, linear, rigid, $1\frac{1}{2}$–2 ft. long. Stem including the inflorescence 2–4 ft. long. Spikes several, cernuous, with the flowers crowded towards the top; spathe-valves lanceolate, acuminate, $\frac{3}{4}$ in. long, membranous, brown or dotted with brown. Perianth white or pale or dark-purple; tube cylindrical, $\frac{1}{3}$–$\frac{1}{2}$ in. long; segments oblong, twice as long as the tube. Stamens half as long as the perianth-limb. Style-branches $1\frac{1}{2}$ in.

long.—Handb. Irid. 159; Engl. Hochgebirgsfl. Trop. Afr. 174. *D. ensifolium*, K. Koch & Bouché in Walp. Ann. vi. 43. *D. cupuliflorum*, Klatt in Decken's Reisen Bot. 73, t. 3. *Ixia pendula*, Thunb. Diss. 15. *Sparaxis pendula*, Ker in Bot. Mag. sub t. 1482; Bot. Reg. t. 1360.

Mozamb. Dist. German East Africa: Kilimanjaro, 8000–10,000 ft., *Johnston*, 22! *Volkens*, 983! between Lake Nyasa and Lake Tanganyika, 6000–8000 ft., *Thomson!* British Central Africa: Nyasaland; Mlanje Plateau, *McClounie!* Nyika Plateau, 6000–7000 ft., *Whyte*, 250! Mpata and commencement of the Tanganyika Plateau, 2000–3000 ft., *Whyte!*

Also widely spread in South Africa.

8. **LAPEYROUSIA**, Pourr.; Benth. et Hook. f. Gen. Pl. iii. 705.

Perianth-tube short or long, subcylindrical, slightly ciliated at the throat; segments oblong-lanceolate or lanceolate, subequal, spreading. Stamens inserted at the throat of the perianth-tube, unilateral, close, arcuate; filaments short; anthers basifixed. Ovary 3-celled; ovules many, superposed; style filiform, with short spreading bifid branches. Capsule small, globose or oblong, loculicidally 3-valved. Seeds small, globose or angled by pressure.—Rootstock an ovoid corm with matted tunics. Leaves distichous, subterete or linear, usually only 1–2 to each stem. Inflorescence various; spathe-valves usually green. Flowers usually small, various in colour.

Species 34, the others all South African.

*OVIEDA. Produced leaves usually 1–2, not forming a basal rosette.

Perianth-tube $\frac{1}{8}$–$\frac{1}{2}$ in. long.
- Perianth-tube scarcely longer than the spathe-valves.
  - Perianth-tube $\frac{1}{8}$ in. long . . . . . 1. *L. cærulea.*
  - Perianth-tube $\frac{1}{2}$ in. long . . . . . 2. *L. abyssinica.*
- Perianth-tube longer than the spathe-valves.
  - Perianth bright red . . . . . 3. *L. erythrantha.*
  - Perianth lilac or white.
    - Produced leaves basal . . . . . 4. *L. Sandersoni.*
    - Produced leaves suprabasal . . . . 5. *L. Welwitschii.*

Perianth-tube $1\frac{1}{2}$–2 in. long.
- Perianth-segments oblanceolate . . . . 6. *L. Bainesii.*
- Perianth-segments linear-subulate . . . . 7. *L. caudata.*

Perianth-tube 4–6 in. long.
- Perianth-segments lanceolate or linear-lanceolate.
  - Outer spathe-valve $\frac{1}{8}$–$\frac{1}{2}$ in. long . . . . 8. *L. congesta.*
  - Outer spathe-valve 1–2 in. long.
    - Perianth-tube 4–$4\frac{1}{2}$ in. long . . . . 9. *L. fragrans.*
    - Perianth-tube 5–6 in. long.
      - Spathe 1–$1\frac{1}{4}$ in. long . . . . 10. *L. edulis.*
      - Spathe $1\frac{1}{2}$–2 in. long . . . . 11. *L. porphyrosiphon.*
  - Outer spathe-valve 3–5 in. long . . . 12. *L. odoratissima.*
- Perianth-segments oblong . . . . 13. *L. cyanescens.*

Flowers unknown . . . . . 14. *L. littoralis.*

**ANOMATHECA. Produced leaves several, thin, forming a distichous rosette.

Perianth-tube about 1 in. long.
  Flowers less than 1 in. diam.
    Perianth-segments 1 lin. broad, lilac . . . 15. *L. holostachya.*
    Perianth-segments 1½–2 lin. broad, red . . 16. *L. cruenta.*
  Flowers large, bright red . . . . . 17. *L. grandiflora.*
Perianth-tube 4–5 in. long . . . . . 18. *L. Monteiroi.*

1. **L. cœrulea,** *Schinz in Verhandl. Bot. Ver. Branden.* xxxi. 212. Corm ovoid, ½ in. diam.; tunics thick, cancellate. Produced leaves 1–2, suprabasal, arcuate, narrowly linear, 6–9 in. long, ½ lin. broad, with a thick stramineous midrib. Stem 1 ft. long including the inflorescence, very slender, terete, branched from the middle. Inflorescence a lax panicle, with few-flowered corymbose branchlets; outer spathe-valve oblong, ⅛ in. long, green with a brown tip. Perianth lilac-blue; tube scarcely longer than the spathe; segments oblanceolate, ¼–⅓ in. long. Stamens nearly as long as the perianth-limb; anthers lanceolate. Style-branches overtopping the anthers.

Lower Guinea. German South-West Africa: Hereroland; Otjitambe, *Belck*, 50, Ombale, *Schinz*, 13! and without precise locality, *Lüderitz*.

2. **L. abyssinica,** *Baker in Journ. Linn. Soc.* xvi. 155. Corm ovoid, ½–¾ in. diam.; tunics thick, reticulated. Produced leaves 3–4, basal or the upper suprabasal, linear, moderately firm, glabrous, 3–6 in. long, ⅛–⅙ in. broad. Stem ½–1 ft. long including the inflorescence, compressed, acutely angled in the lower part, usually branched from about the middle. Spikes lax, 2–6-flowered; outer spathe-valve oblong-lanceolate, greenish-brown, ¼ in. long. Perianth lilac; tube cylindrical, as long as the spathe; segments oblanceolate, ½ in. long. Stamens more than half as long as the segments; anthers shorter than the filaments.—Handb. Irid. 168; Engl. Hochgebirgsfl. Trop. Afr. 178. *Geissorhiza abyssinica*, R. Br. in Salt, Trav. App. lxii.; A. Rich. Tent. Fl. Abyss. ii. 308. *Montbretia abyssinica*, Hochst. and *M. gallabatensis*, Schweinf. ex Baker in Journ. Linn. Soc. xvi. 155.

Nile Land. Galabat: Matamma, *Schweinfurth!* Abyssinia: Tigre; near Adowa, *Schimper*, 329! and without precise locality, *Schimper*, 563! *Parkyns!*

3. **L. erythrantha,** *Baker in Journ. Linn. Soc.* xvi. 155. Corm ovoid, ¾–1 in. diam.; tunics thick, fibrous. Produced basal leaves 1–2, linear, erect, glabrous, rather thin, 1 foot or more long, ¼–⅓ in. broad. Stem including inflorescence 1–2 ft. long, compressed, acutely angled, branched from below the middle. Branches of the panicle long, corymbose; spathe-valves oblong, membranous, ⅛ in. long, the inner bifid. Perianth bright red; tube cylindrical, ⅙–¼ in. long; segments oblanceolate, not longer than the tube. Stamens as long as the perianth-segments; anthers oblong.—Handb. Irid. 168. *Ovieda erythrantha*, Klotzsch in Peters, Reise Mossamb. Bot. 516, t. 58.

South Central. Congo Free State: Upper Congo; Katanga, *Cornet*.

Mozamb. Dist. Portuguese East Africa: Zambesi Delta; Kongoni River, *Kirk*, 318! near the River Shire, between its mouth and Morambala Mountain, *Kirk*, 16! Lower Zambesi; Shupanga, *Kirk!* British Central Africa: Nyasaland; Manganja Hills, *Kirk! Waller!*

4. **L. Sandersoni,** *Baker*, *Handb. Irid.* 169. Corm ovoid, $\frac{1}{2}$–$\frac{3}{4}$ in. diam.; tunics of thick wiry strands. Produced basal leaves 2–3, linear, erect, moderately firm, $\frac{1}{2}$–1 ft. long, $\frac{1}{8}$–$\frac{1}{3}$ in. broad. Stem including the inflorescence 1–1$\frac{1}{2}$ ft. long, branched from the middle or below it, compressed and acutely angled, with reduced leaves from the lower forks. Inflorescence a lax panicle, with long corymbose branches; spikes 2–4-flowered; outer spathe-valve ovate or oblong, submembranous, $\frac{1}{8}$–$\frac{1}{6}$ in. long. Perianth lilac or whitish; tube slender, $\frac{1}{4}$–$\frac{1}{3}$ in. long; segments oblanceolate, as long as the tube. Stamens and style rather shorter than the perianth-segments.—Fl. Cap. vi. 95.

Lower Guinea. Hereroland; Otjitambe, *Belck*, 50!

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 50! Kondowe to Karonga, 2000–6000 ft., *Whyte*, 338! and without precise locality, *Buchanan*, 426! Rhodesia: Matabeleland, *Scott-Elliot!* Leshumo Valley, *Holub*, 830! 832! 834!

Also in the Transvaal.

5. **L. Welwitschii,** *Baker*, *Handb. Irid.* 168. Corm ovoid, $\frac{1}{2}$ in. diam., with thick reticulated brown tunics. Produced leaves 2, supra-basal, narrowly linear, arcuate, $\frac{1}{2}$ ft. long, 1 lin. broad. Stem slender, terete, flexuose, 8–12 in. long including the inflorescence, branched from below the middle. Inflorescence a lax panicle with few-flowered corymbose branchlets; outer spathe-valve ovate, submembranous, $\frac{1}{8}$ in. long. Perianth lilac; tube $\frac{1}{4}$ in. long; segment oblanceolate, as long as the tube. Stamens nearly as long as the perianth-segments; anthers small, oblong.—*L. abyssinica*, Baker in Trans. Linn. Soc. ser. 2, Bot. i. 272.

Lower Guinea. Angola: Pungo Andongo, 2400–3800 ft., *Welwitsch*, 1531!

6. **L. Bainesii**, *Baker in Journ. Bot.* 1876, 338. Corm not seen. Leaves 3–4, erect, linear, glabrous, strongly ribbed, 1–1$\frac{1}{2}$ ft. long. Stems and branches quadrangular, slightly compressed, 1$\frac{1}{2}$–2 ft. long including the inflorescence. Flowers very numerous, "strongly scented" (*Lugard*), forming a corymbose panicle, 1–2 at the end of each branch; spathe-valves oblong-lanceolate, acute or acuminate, green or rosy, $\frac{1}{4}$–$\frac{1}{3}$ in. long. Perianth white, with chocolate spots at the base of the lower segments; tube slender, 1$\frac{1}{2}$ in. long; segments of the limb oblanceolate, $\frac{1}{3}$ in. long. Stamens shorter than the perianth-segments.—Fl. Cap. vi. 95.

Mozamb. Dist. Ngamiland: between Kobis and Shaw Valley, *Baines!* Kwebe, *Lugard*, 179! near Bachakuru, *Lugard*, 242!

Also in South Africa.

7. **L. caudata,** *Schinz in Verhandl. Bot. Ver. Branden*, xxxi. 213. Corm globose, $\frac{1}{2}$ in. diam. Produced leaves linear; basal leaves 2, ascending, narrowly linear, firm, glabrous, 6–9 in. long, $\frac{1}{12}$–$\frac{1}{8}$ in. broad above the base. Stem including the inflorescence 1–1$\frac{1}{2}$ ft. long, te-

copiously branched from a little above the base. Spikes very lax, few-flowered; outer spathe-valve lanceolate, green, $\frac{1}{3}$–$\frac{1}{2}$ in. long. Perianth pale; tube very slender, $1\frac{1}{2}$ in. long; segments linear-subulate, half as long as the tube. Stamens and style very short.—Baker, Handb. Irid. 172.

Lower Guinea. German South-west Africa: Amboland; near Olukonda, *Schinz*, 23! *Rautanen*, 2!

8. **L. congesta,** *Rendle in Journ. Linn. Soc.* xxx. 403. Corm $\frac{1}{3}$ in. diam.; tunics rigid, cancellate, dark brown. Produced leaf 1, linear, arising from the base of the spike, 4–5 in. long. Outer spathe-valve linear-lanceolate, $\frac{1}{3}$–$\frac{1}{2}$ in. long. Perianth-tube slender, 4–5 in. long; segments linear-lanceolate, acute, above 1 in. long. Anthers $\frac{1}{4}$ in. long. Style-branches reaching to the tip of the anthers.

Mozamb. Dist. German East Africa: between the coast and Uyui, *Taylor*.

No specimen in the Kew Herbarium.

9. **L. fragrans,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 272. Corm ovoid, $\frac{3}{4}$ in. diam.; tunics thick, brown, cancellate, produced in stout bristles above its neck. Basal leaves 2, narrowly linear, rigid, erect, strongly nerved, 6–8 in. long, $\frac{1}{12}$–$\frac{1}{8}$ in. broad. Stem very short, branched, flattened, acutely angled. Peduncles 1–2-flowered; spathe-valves green, lanceolate, the outer 1 in. long. Perianth white, fragrant; tube very slender, 4–$4\frac{1}{2}$ in. long; segments lanceolate, acute, 1 in. long. Filaments very short; anthers linear, $\frac{1}{3}$ in. long. Capsule oblong, $\frac{1}{2}$ in. long.—Handb. Irid. 172.

Lower Guinea. Angola: Huilla; subtemperate region in rocky and stony places, near Lopollo, *Welwitsch*, 1552!

10. **L. edulis,** *Schinz in Bull. Herb. Boiss.* iv. *App.* iii. 49. Corm ovoid; outer tunics reticulate-fibrous. Stem much branched, stout, erect, glabrous, 3–4 ft. long; branches acutely angled. Leaves 5–6, superposed, linear, 1–$1\frac{1}{2}$ ft. long. Flowers copiously panicled; branches laxly corymbose; spathe-valves lanceolate, acuminate, 1–$1\frac{1}{4}$ in. long. Perianth white; tube very slender, 5–6 in. long; segments lanceolate, 1 in. long. Stamens half as long as the perianth-segments; anthers linear. Style much overtopping the stamens.

Lower Guinea. German South-west Africa: Amboland; west of Olukonda, *Rautanen*, 106!

11. **L. porphyrosiphon,** *Baker.* Stem stout, acutely angled, narrowly winged, with several erecto-patent branches, each subtended by a small linear leaf. Panicle corymbose, 1 ft. long and broad; spathe-valves linear, firm, pale green, $1\frac{1}{2}$–2 in. long. Perianth-tube very slender, 5–6 in. long, tinged with purple; segments lanceolate, white, $\frac{3}{4}$ in. long. Stamens more than half as long as the perianth-segments; anthers large, linear. Style-branches overtopping the anthers. Capsule subglobose, $\frac{1}{3}$ in. long.

Mozamb. Dist. Ngamiland: Kalahari Desert, near Mamunwe, *Lugard*, 338!

12. **L. odoratissima,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 273, *t.* 36, *figs.* 2–3. Corm ovoid, $\frac{1}{2}$ in. diam.; tunics rigid, nearly black, reticulated. Produced basal leaves 2, linear, erect, moderately firm, $\frac{1}{2}$ ft. long, $\frac{1}{8}$–$\frac{1}{6}$ in. broad. Stem simple, very short. Spike dense, simple, many-flowered; spathe-valves linear, green, herbaceous, the outer 3–5 in. long. Perianth white, very fragrant; tube cylindrical, 4–5 in. long; segments lanceolate, very acute, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long. Filaments very short; anthers linear, $\frac{1}{4}$ in. long.—Handb. Irid. 173.

Lower Guinea. Angola: Huilla; subtemperate region, among bushes in sandy and stony places near Lopollo, *Welwitsch*, 1551!

13. **L. cyanescens,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 272. Corm globose, 1 in. diam.; tunics coarsely cancellate. Produced basal leaves 4, linear, rigid, erect, strongly nerved, 1–$1\frac{1}{2}$ ft. long, $\frac{1}{8}$–$\frac{1}{6}$ in. broad. Stem $1\frac{1}{2}$ ft. long including the inflorescence, branched from the middle, acutely angled. Panicle very long; spikes 1–2-flowered; spathe-valves green, rigid, lanceolate, the outer $1\frac{1}{2}$ in. long. Perianth white, tinged with violet; tube slender, 4–5 in. long; segments oblong, 1 in. long. Stamens half as long as the perianth-limb; anthers large, linear. —Handb. Irid. 172.

Lower Guinea. Angola: Huilla; subtemperate region, hills near Humpata, in spongy places, *Welwitsch*, 1553!

14. **L. littoralis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 272. Corm not seen. Stem much branched, 3 in. long, furnished with 2 linear, firm, glabrous leaves below the inflorescence; rhachis acutely angled, flexuose; branches 1–3-flowered; spathe-valves lanceolate, green, subequal, 1 in. long. Flower not seen. Capsule obovoid-oblong, $\frac{1}{4}$–$\frac{1}{3}$ in. long.—Handb. Irid. 172.

Lower Guinea. Angola: Mossamedes, on sandy hills by the seashore, *Welwitsch!*

No specimen in the Kew Herbarium.

15. **L. holostachya,** *Baker in Kew Bulletin*, 1894, 391. Corm ovoid, $\frac{1}{2}$ in. diam.; tunics of matted fibres, dark brown. Produced leaves 4–5, contiguous, erect, thin, linear, glabrous, the largest 6–8 in. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad. Stem slender, simple, 1 ft. long. Flowers 4–5, in a very lax simple erect spike; spathe-valves green; outer the longest, lanceolate, $\frac{1}{4}$–$\frac{1}{2}$ in. long. Perianth lilac; tube slender, erect, 1 in. long; segments lanceolate, half as long as the tube. Stamens just exserted from the tube. Style-branches spreading, $\frac{1}{4}$ in. long.

Mozamb. Dist. British Central Africa: Urungu; Fwambo, *Carson*, 14 of 1893 collection!

16. **L. cruenta,** *Baker*, *Handb. Irid.* 173. Corm ovoid, with finely reticulated fibrous brown tunics. Leaves about 6 in a distichous basal rosette, linear, thin, glabrous, $\frac{1}{2}$–1 ft. long. Flowers 3–12 in a lax secund spike; outer spathe ovate, green, $\frac{1}{6}$–$\frac{1}{3}$ in. long. Perianth pale red; tube slender, cylindrical, 1–$1\frac{1}{2}$ in. long; segments of the limb oblong, $\frac{1}{3}$–$\frac{1}{2}$ in. long, the three lower with a dark spot at the base.

Stamens less than half as long as the perianth-segments. Capsule small, globose.—Fl. Cap. vi. 96. *Anomatheca cruenta*, Lindl. in Bot. Reg. t. 1369.

Mozamb. Dist. German East Africa: Usagara Mountains, cultivated specimen *Hannington!*

Sent alive by Bishop Hannington to Mr. W. Mitten.

Also widely spread in South Africa.

17. **L. grandiflora,** *Baker in Bot. Mag. t.* 6924. Corm globose, $\frac{3}{4}$ in. diam; tunics of fine parallel fibres. Produced leaves 6–8 in a rosette, linear, thin, erect, glabrous, $\frac{1}{2}$–1 ft. long, $\frac{1}{4}$–$\frac{1}{2}$ in. broad. Peduncle 1 ft. long, terete, simple or once forked; flowers 3–6 in a lax spike; outer spathe-valve lanceolate, submembranous, $\frac{1}{2}$–$\frac{3}{4}$ in. long, much exceeding the inner. Perianth bright scarlet; tube cylindrical, erect, 1 in. long; segments oblanceolate, obtuse, as long as the tube, the three lower with a dark blotch. Stamen and style as long as the perianth-segments. Capsule globose, $\frac{1}{3}$ in. diam.—Handb. Irid. 173. *Anomatheca grandiflora*, Baker in Journ. Bot. 1876, 337.

Mozamb. Dist. Portuguese East Africa: Zambesi Delta; mouth of the River Luabo, *Kirk!* British Central Africa: Nyasaland; Mount Sochi, by streams, *Meller!* and without precise locality, *Buchanan! Johnston!*

Also at Delagoa Bay.

18. **L. Monteiroi,** *Baker.* Corm not seen. Basal leaves 3 in a rosette, thin, erect, linear, glabrous, 8–10 in. long, $\frac{1}{4}$ in. broad. Stem simple, 1–2-flowered, slender, acutely angled, bearing a reduced leaf at the middle. Spathe-valves green, lanceolate, acuminate, the outer $1\frac{1}{4}$–$1\frac{1}{2}$ in. long. Perianth white; tube slender, 4–$4\frac{1}{2}$ in. long; segments oblong, 1 in. long. Filaments short; anthers large, linear. Style overtopping the anthers.—*Anomatheca angolensis*, Baker in Journ. Bot. 1876, 337.

Lower Guinea. Angola, *Monteiro!*

Described from a dried specimen of a plant that flowered at Kew in 1862.

9. CROCOSMIA, Planch.; Benth. et Hook. f. Gen. Pl. iii. 707.

Perianth-tube cylindrical, dilated upwards; segments subequal, spreading, oblong. Stamens inserted at the throat of the perianth-tube, unilateral, arcuate; filaments filiform; anthers versatile. Ovary 3-celled; ovules few in each cell, superposed; style filiform; branches spreading, entire, slightly flattened at the tip. Fruit an inflated globose, 3-lobed capsule, dehiscing loculicidally, with persistent chartaceous valves. Seeds few, globose.

Monotypic.

Widely spread in the eastern part of South Africa.

1. **C. aurea,** *Planch. in Flore des Serres, t.* 702. Rootstock a moderately large globose corm, with brown membranous tunics.

Basal leaves about 6 in a distichous rosette, linear or ensiform, erect, moderately firm, 1–1½ ft. long, ½–1 in. broad at the middle. Stem including the inflorescence 2–4 ft. long, simple or much branched. Flowers few, in a lax spike; rhachis flexuose; spathe-valves ovate, subequal, green or brownish, ¼–⅓ in. long, the inner bifid at the tip. Perianth bright orange-yellow; tube ¾–1 in. long; segments 1–1½ in. long, finally spreading or reflexing. Stamens and style as long as the perianth-segments. Capsule ½ in. diam.—Klotzsch in Peters, Reise Mossamb. Bot. 516; Baker, Handb. Irid. 189; *Tritonia aurea*, Pappe ex Hook. in Bot. Reg. t. 4335; Lindl. Bot. Reg. 1847, t. 61; *Crocanthus mossambicensis*, Klotzsch in Peters, Reise Mossamb. t. 57.

Mozamb. Dist. German East Africa: Ugogo, *Hannington!* Usambara; Lutindi, *Holst*, 3234! Magila, 900 ft., *Kirk!* Mountains east of Lake Nyasa, *Johnson!* Portuguese East Africa: Boror, *Peters*. British Central Africa: Nyasaland; Nyika Plateau, 6000–7000 ft., *Whyte!* top of Mount Zomba, *Buchanan*, 292! and without precise locality, *Buchanan*, 724!

Also in South Africa.

10. **TRITONIA**, Ker; Benth. et Hook. f. Gen. Pl. iii. 708.

Perianth-tube short or long, cylindrical, dilated towards the top; segments obovate or oblong, subequal or unequal. Stamens unilateral, arcuate, parallel, inserted near the top of the perianth-tube; filaments filiform; anthers linear or oblong, usually versatile. Ovary 3-celled; ovules many, superposed; style filiform, with 3 entire short spreading clavate branches. Capsule small, oblong, membranous, loculicidally 3-valved. Seeds small, globose, or angled by pressure.—Rootstock a corm with fibrous or reticulated tunics. Leaves forming a distichous basal rosette, usually linear. Spikes simple or panicled. Spathe-valves short, membranous in part; outer valve oblong, entire; inner bifid at the tip. Flowers comparatively small, red, white, or yellow.

Species 35, the others all South African.

Perianth-segments subequal, oblong or lanceolate.
- Leaves 1/10–⅕ in. broad . . . . . 1. *T. mensensis.*
- Leaves ¼–⅓ in. broad . . . . . 2. *T. laxifolia.*
- Leaves about 1 in. broad.
  - Spathe-valves small . . . . . 3. *T. cinnabarina.*
  - Spathe-valves large . . . . . 4. *T. tigrina.*
- Perianth-segments unequal, unguiculate . . . 5. *T. bongensis.*

1. **T. mensensis,** *Schweinf. in Bull. Herb. Boiss.* ii. *App.* ii. 86. Corm small, subglobose; tunics of reticulated fibres. Lower leaves 3, approximate, suprabasal, narrowly linear, 16–20 in. long, 1/10–⅕ in. broad. Stem 20–30 in. long, bearing 1–2 reduced leaves. Spike lax, 2–8-flowered; spathe-valves lanceolate-cuspidate, subequal. Perianth rose-red or white; tube funnel-shaped, ½ in. long; segments oblong, subequal, nearly 1 in. long. Style-branches overtopping the anthers. Capsule obovoid-oblong, ½ in. long.

Nile Land. Eritrea: Mensa; Geleb, 7000 ft., *Schweinfurth*, 1188! 1522.

2. **T. laxifolia,** *Benth. Gen. Plant.* iii. 708. Corm globose, $\frac{3}{4}$–1 in. diam.; tunics of fine matted reticulated fibres. Leaves 4–6 in a distichous basal rosette, erect, linear, moderately firm, finely veined, $\frac{1}{2}$–1 ft. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad. Stem including the inflorescence 1–2 ft. long, usually simple. Spikes lax, 6–12-flowered; outer spathe-valve oblong, brownish, $\frac{1}{3}$–$\frac{1}{2}$ in. long. Perianth bright red; tube rather longer than the spathe, funnel-shaped in the upper half; segments oblong, subequal, as long as the tube. Stamens a little shorter than the perianth-limb; anthers large, linear.—Baker, Handb. Irid. 195. *Montbretia laxifolia*, Klatt in Linnæa, xxxii. 754; Baker in Trans. Linn. Soc. xxix. 155.

Mozamb. Dist. German East Africa: in quantities by hedges, 4000 ft., *Speke & Grant!* British Central Africa: Nyasaland; plateau of Mount Zomba, 5000–6000 ft., *Whyte!*

Also in South Africa.

3. **T. cinnabarina,** *Pax in Engl. Jahrb.* xv. 152. Corm globose, above $\frac{1}{2}$ in. diam. Produced leaves suprabasal, ensiform, thin, glabrous, falcate, 1$\frac{1}{2}$–2 ft. long, 1 in. broad. Stem slightly ancipitous, shorter than the leaves. Panicle lax; branches few, ascending, few-flowered; spathe-valves triangular, subscariose, slightly unequal, $\frac{1}{6}$–$\frac{1}{5}$ in. long. Perianth cinnabar-red, above $\frac{1}{2}$ in. long; segments slightly unequal, oblong or lanceolate, acute, twice as long as the tube. Stamens shorter than the perianth-limb. Capsule obtusely angled, under $\frac{1}{2}$ in. diam.

Lower Guinea. Angola: Catala Canginga, *Teuscz*, 573.

No specimen in the Kew Herbarium.

4. **T. tigrina,** *Pax in Engl. Jahrb.* xv. 152. Produced leaves suprabasal, ensiform, rigid, with thickened stramineous ribs and margin, the longest above 1 ft. long, nearly 1 in. broad. Stem simple, slightly angled, 2–3 ft. long. Spike simple, lax, many-flowered; spathe-valves lanceolate, subherbaceous, rather shorter than the perianth. Perianth spotted, 1 in. long; tube slightly curved, funnel-shaped at the apex; segments oblong-lanceolate, acute, subequal, as long as the tube. Stamens shorter than the perianth-limb; anthers linear, $\frac{1}{3}$ in. long. Style as long as the stamens.

Lower Guinea. Angola: between Janza and Malange, *Pogge*, 431.

No specimen in the Kew Herbarium.

5. **T. bongensis,** *Pax in Engl. Jahrb.* xv. 153. Corm globose, about 1 in. diam. Produced leaves 2, suprabasal, ensiform, erect, glabrous, strongly ribbed, 1 ft. long, above $\frac{1}{2}$ in. broad at the middle, narrowed gradually to the base and apex. Stem 1 ft. long, including the simple spike, bearing 2–3 much-reduced leaves. Spike lax, 3–6 in. long; spathe subscariose, brownish, $\frac{1}{6}$ in. long; outer valve oblong. Perianth red-purple; tube cylindrical, nearly twice as long as the spathe; segments of the limb oblong-unguiculate, the upper larger than the others, ($\frac{1}{4}$ in. long) and arcuate. Stamens as long as the perianth.—Baker, Handb. Irid. 196.

Nile Land. Bongo, by the River Lesi, *Schweinfurth*, 4025!

11. **ACIDANTHERA**, Hochst.; Benth. et Hook. f. Gen. Pl. iii. 706.

Perianth-tube usually long, cylindrical, slightly dilated upwards; segments subequal, spreading, oblong or oblanceolate-oblong. Stamens unilateral, contiguous, inserted at or a little below the throat of the perianth-tube; filaments filiform; anthers linear, with the connective sometimes produced a little beyond the cells. Ovary 3-celled; ovules many, superposed; style long, filiform; branches short, flattened in the upper half. Capsule oblong, membranous, loculicidally 3-valved. Seeds globose or discoid.—Rootstock a tunicated corm. Leaves linear, forming a distichous rosette. Flowers few, laxly spicate. Spathe-valves long, green, lanceolate.

Species 18, the others all South African.

Limb spotted with purple at the throat.
- Produced leaves 3–4 . . . . . 1. *A. bicolor.*
- Produced leaves many . . . . . 2. *A. æquinoctialis.*

Limb concolorous at the throat.
- Perianth-tube 2 in. long . . . . . 3. *A. gracilis.*
- Perianth-tube $2\frac{1}{2}$–3 in. long.
  - Perianth-segments oblanceolate, $\frac{1}{2}$ in. long . . 4. *A. unicolor.*
  - Perianth-segments oblong, 1 in. long . . . 5. *A. ukambanensis.*
- Perianth-tube 3–4 in. long.
  - Perianth-segments oblong . . . . . 6. *A. laxiflora.*
  - Perianth-segments ovate . . . . . 7. *A. candida.*
- Perianth-tube 4–5 in. long . . . . . 8. *A. Gunnisi.*

1. **A. bicolor,** *Hochst. in Flora*, 1844, 25. Corm globose, 1 in. diam.; tunics brown, formed of matted fibres, reticulated upwards. Produced leaves 3–4; two basal, erect, linear, moderately firm, glabrous, $\frac{1}{2}$–1 ft. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad. Stem simple, 1–$1\frac{1}{2}$ ft. long, not angled, bearing 1–2 reduced leaves. Spike simple, very lax, 2–4-flowered; outer spathe-valve lanceolate, green, herbaceous, 2–3 in. long. Perianth-tube slender, 4–5 in. long; segments oblong, acute, $1\frac{1}{2}$ in. long, the three lower with a large oblong dark purple spot at the base. Stamens nearly as long as the perianth-limb; anthers linear, $\frac{1}{3}$ in. long.—Bouché & Wittm. in Berlin. Monatsschr. xix. 12, t. 1; Baker, Handb. Irid. 188; Engl. Hochgebirgsfl. Trop. Afr. 175. *Ixia quartiniana*, A. Rich. Tent. Fl. Abyss. ii. 310. *Sphærospora gigantea*, Klatt in Linnæa, xxxiv. 699.

Nile Land. Eritrea: Keren, 6500–7500 ft., *Steudner*, 429. Abyssinia: Shire, *Quartin-Dillon & Petit*, 112! Sana; plain of Mount Walcha, *Schimper*, 1634! and without precise locality, *Schimper*, 434! Somaliland: Daimoli Peak, 4000 ft., *Aylmer!*

Mozamb. Dist. British Central Africa: Shire Highlands, *Buchanan*, 5!

2. **A. æquinoctialis,** *Baker in Journ. Linn. Soc.* xvi. 160. Corm globose, $1\frac{1}{2}$ in. diam; tunics of reticulated matted fibres. Stem erect, 3–4 ft. long. Leaves many, superposed, ensiform, strongly veined, glabrous, 1–$1\frac{1}{2}$ ft. long. Flowers 3–6 in a very lax simple distichous spike; outer spathe-valve lanceolate, foliaceous, 3–4 in. long in the

lower flowers. Perianth-tube cylindrical, curved at the top, 5–6 in. long; limb 2 in. diam.; segments ovate, cuspidate, subequal, white, all furnished with an ovate or lanceolate dark purple spot at the base. Stamens and style arcuate, much shorter than the perianth-segments.—Bot. Mag. t. 7393. *Gladiolus æquinoctialis*, Herb. in Lindl. Bot. Reg. 1842, Misc. 85.

Upper Guinea. Sierra Leone: in crevices of bare gneiss rocks near the summit of Sugarloaf Mountain, 3000 ft., *Scott-Elliot*, 3954! *Donovan!* and without precise locality, *Don.*

Introduced into cultivation by Captain Donovan in 1893.

3. **A. gracilis,** *Pax in Engl. Jahrb.* xv. 154. Corm small, globose. Produced leaves 2–3, narrowly linear, firm, erect, 3–4 in. long, $\frac{1}{8}$ in. broad. Stem simple, slender, under 1 ft. long, 1–2-flowered; outer spathe-valve lanceolate, green, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long. Perianth white, tinged outside with red; tube slender, 2 in. long, scarcely dilated at the apex; segments ovate, 1 in. long, not spotted at the throat. Stamens and style reaching halfway up the perianth-limb.—*A. zanzibarica*, Baker, Handb. Irid. 188.

Nile Land. British East Africa: near Mombasa, in heavy soil amongst grass *Hildebrandt*, 2015! Ukamba, *Scott-Elliot*, 2351!

4. **A. unicolor,** *Hochst. in Schimp. Pl. Abyss, No.* 2304. Corm ovoid, $\frac{1}{2}$ in. diam.; tunics brown, strongly reticulated. Produced leaves 3, suprabasal, superposed, linear, moderately firm, glabrous, 6–9 in. long, $\frac{1}{4}$ in. broad. Stem slender, 1 ft. long, not angled, simple or branched. Spikes very lax, 2–3-flowered; outer spathe-valve green, herbaceous, lanceolate, $\frac{1}{2}$ in. long. Perianth white; tube slender, $2\frac{1}{2}$–3 in. long; segments oblanceolate, $\frac{1}{2}$ in. long, without any purple spot at the base. Stamens rather shorter than the perianth-limb.—Baker, Handb. Irid. 188; Engl. Hochgebirgsfl. Trop. Afr. 175. *Tritonia Schimperi*, Aschers. & Klatt in Linnæa, xxxiv. 697.

Nile Land. Abyssinia: Tigre; near Goelleb on the River Tacazze, in woods and thickets, 4000 ft., *Schimper*, 2304!

5. **A. ukambanensis**, *Baker.* Corm small. Produced leaves 3 linear, erect, grass-like, glabrous, the lowest 7–8 in. long, $\frac{1}{4}$ in. broad the others smaller. Stem slender, 1–$1\frac{1}{2}$ ft. long. Spike simple, lax few-flowered; spathe-valves green, lanceolate, the lower outer 2 in. long Perianth-tube 3 in. long, funnel-shaped in the upper third; limb white 1 in. long, not spotted at the throat. Stamens shorter than the perianth-limb.

Nile Land. British East Africa: Ukamba, on rocks, 5000–6000 ft., *Scott-Elliot*, 6434!

6. **A. laxiflora,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* ii. 350 Corm globose, $\frac{1}{2}$ in. diam.; tunics of matted fibres, reticulated upwards. Produced leaves 3, suprabasal, linear, moderately firm, 3–6 in. long, $\frac{1}{6}$–$\frac{1}{3}$ in. broad. Perianth white; tube slender to the apex, 3–4 in. long;

segments oblong, white, 1 in. long, not spotted at the throat. Stamens reaching halfway up the perianth-limb. Capsule clavate, 1 in. long.—Handb. Irid. 188.

Nile Land. British East Africa: Taita; Maungu Mountain, 2000 ft., *Johnston!*

Mozamb. Dist. German East Africa: Kilimanjaro; Marangu, 3500 ft., *Volkens*, 2131!

7. **A. candida,** *Rendle in Journ. Linn. Soc.* xxx. 404. Corm globose, $\frac{1}{2}$ in. diam.; tunics coarsely reticulated upwards. Produced leaves 2, linear, rigid, about 1 ft. long. Stem stiffly erect, simple, 1–1$\frac{1}{2}$ ft. long, bearing 1 reduced leaf. Spathe lax, 2–4-flowered; outer spathe-valve linear-lanceolate, green with a purplish base, 2–2$\frac{1}{2}$ in. long. Perianth white; tube slender, 3$\frac{1}{2}$–4 in. long; segments ovate, about 1 in. long. Stamens half as long as the perianth-limb.

Nile Land. British East Africa: Athi Plains, at Lanjoro, *Gregory.*

No specimen at Kew.

8. **A. Gunnisi,** *Rendle in Journ. Bot.* 1898, 31. Corm globose, above $\frac{1}{2}$ in. diam.; outer tunics pale brown, finely reticulated. Produced leaves generally 3 from near the base of the stem, narrowly linear, as long as the stem, rigid, $\frac{1}{10}$–$\frac{1}{6}$ in. broad, with a prominent midrib. Stem simple, rather compressed, 2$\frac{1}{2}$ ft. long, bearing several reduced leaves upwards. Spathe lax, 3–4-flowered; outer spathe-valves linear, 1$\frac{1}{2}$–2 in. long, greenish tinged with red. Perianth white or faintly tinged with rose-purple; tube 4–5 in. long; segments of the limb ovate, 1$\frac{1}{4}$–1$\frac{1}{2}$ in. long. Stamens half as long as the perianth-segments.

Nile Land. Somaliland; Waggar Mountains, alt. 6500 ft., *Mrs. Lort-Phillips!* Daimoli Mountain, *Gillet & Alymer.*

12. GLADIOLUS, Linn.; Benth. et Hook. f. Gen. Pl. iii. 709.

Perianth-tube funnel-shaped, straight or curved; segments more or less unequal, the upper one of the outer row the largest. Stamens inserted at or near the throat of the perianth-tube, unilateral, parallel, contiguous, arcuate; filaments filiform; anthers linear, basifixed. Ovary oblong, 3-celled; ovules many, superposed; style long, filiform, arcuate; style-branches short, spreading, flattened and cuneate at the stigmatose tip, entire. Capsule oblong, loculicidally 3-valved. Seeds globose or flattened and winged.—Rootstock a tunicated corm. Leaves linear or ensiform, rarely subterete, distichous. Inflorescence spicate, simple or branched; spathe-valves usually lanceolate, green. Flowers very various in size and colour.

Species 150, the others South African, and spread through Central Europe and the Mediterranean and Oriental regions.

*Eugladiolus. Perianth-segments not unguiculate.

†Leaves narrow. Flowers small.

Spikes not secund.

Leaves with short free points . . . . 1. *G. Melleri.*

Leaves long.
Perianth 1 in. long . . . . . 2. *G. Buchanani.*
Perianth 1½ in. long . . . . . 3. *G. laxiflorus.*
Spikes secund.
Upper segments not cucullate . . . . 4. *G. tritonioides.*
Upper segments cucullate.
Leaves subulate . . . . . 5. *G. gracillimus.*
Leaves linear, very short.
Upper segments twice as long as the tube.
Reduced leaves 2 to a stem . . . 6. *G. aphanophyllus.*
Reduced leaves several to a stem . . 7. *G. Whytei.*
Upper segments longer than the tube . . 8. *G. atropurpureus.*
Upper segments as long as the tube . . 9. *G. cœrulescens.*
Leaves linear, long.
Leaves pubescent . . . . . 10. *G. pubescens.*
Leaves glabrous.
Leaves $\frac{1}{12}$ in. broad . . . . . 11. *G. zambesiacus.*
Leaves $\frac{1}{8}$–$\frac{1}{4}$ in. broad.
Perianth 1–1$\frac{1}{4}$ in. long.
Perianth dark purple . . 12. *G. luridus.*
Perianth lilac . . . . 13. *G. masukuensis.*
Perianth yellow . . . . 14. *G. gregarius.*
Perianth 1$\frac{3}{4}$–2 in. long.
Reduced stem-leaf 1 . . . 15. *G. zanguebaricus.*
Reduced stem-leaves 6–9 . . 16. *G. venulosus.*
Leaves $\frac{1}{4}$–$\frac{1}{2}$ in. broad.
Limb as long as the tube . . 17. *G. brevicaulis.*
Limb much longer than the tube . 18. *G. Hanningtoni.*
††Leaves narrow. Flowers large.
Upper perianth segments not cucullate.
Perianth white.
Stamens much shorter than the upper segments.
Stem leaves 3 . . . . . 19. *G. Grantii.*
Stem leaves 6–8 . . . . . 20. *G. nyikensis.*
Stamens nearly as long as the upper segments.
Perianth pink . . . . . 21. *G. erectiflorus.*
Perianth 2–2$\frac{1}{2}$ in. long . . . . 22. *G. caudatus.*
Perianth 3–4 in. long . . . . 23. *G. oligophlebius.*
Perianth pale yellow.
Perianth-segments oblong . . . 24. *G. pauciflorus.*
Perianth-segments ovate . . . . 25. *G. luteolus.*
Upper perianth-segments cucullate.
Perianth whitish . . . . . 26. *G. corneus.*
Perianth yellow . . . . . 27. *G. Newii.*
Perianth bright red . . . . 28. *G. splendidus.*
†††Leaves comparatively broad. Flowers small.
Stamens nearly as long as the perianth . 29. *G. multiflorus.*
Stamens distinctly shorter than the perianth . 30. *G. spicatus.*
††††Leaves comparatively broad. Flowers large.
Upper segments not cucullate.
Perianth pink . . . . . 31. *G. brachyandrus.*
Perianth bright red.
Perianth 1$\frac{1}{2}$–2 in. long . . . . 32. *G. benguellensis.*
Perianth 3 in. long . . . . 33. *G. decoratus.*
Upper segments cucullate.

Leaves short . . . . . 34. *G. sulphureus.*
Leaves long.
Leaves $\frac{1}{8}$–$\frac{3}{4}$ in. broad . . . . . 35. *G. quartinianus.*
Leaves 1–$1\frac{1}{4}$ in. broad.
Stamens rather shorter than the upper segments 36. *G. Buettneri.*
Stamens a third the length of the upper segments . . . . . 37. *G. Johnstoni.*
**Hebea. Perianth-segments all distinctly unguiculate.
Spathe-valves oblong-cuspidate . . . . . 38. *G. Thomsoni.*
Spathe-valves acute.
Leaves with only short free tips.
Stem flexuose . . . . . 39. *G. flexuosus.*
Stem not flexuose.
Perianth-segments obtuse . . . . . 40. *G. unguiculatus.*
Perianth-segments cuspidate . . . . 41. *G. Oatesii.*
Leaves long . . . . . 42. *G. edulis.*

1. **G. Melleri,** *Baker in Journ. Bot.* 1876, 334. Corm medium-sized, globose. Produced leaf rigid, linear, strongly ribbed, 1 ft. long, $\frac{1}{4}$ in. broad. Stem terete, moderately stout, bearing several reduced leaves with short free linear points. Spikes very lax, not secund, 6–12-flowered; outer spathe-valve green, lanceolate, acuminate, 1–$1\frac{1}{2}$ in. long. Perianth red, 18–21 lin. long, suberect; tube narrowly funnel-shaped, shorter than the limb; upper segments oblong-cuneate, obtuse, 1 in. long; 3 lower as broad, but rather shorter, also obtuse. Stamens distinctly shorter than the upper segments. Capsule clavate-oblong, $\frac{3}{4}$–1 in. long.—Handb. Irid. 212.

Mozamb. Dist. Portuguese East Africa: Makua; Namuli Hills, *Last!* British Central Africa: Nyasaland; Manganja Hills, *Meller! Waller!* at the foot of Mpimbe Hill, 3000 ft., *Kirk!* Mount Mlanje, *Whyte!* Shibisa (Chikwawa) to Tshinmuze, 2000–4000 ft., *Kirk!* and without precise locality, *Buchanan*, 1333! Matabeleland, *Oates!*

2. **G. Buchanani,** *Baker, Handb. Irid.* 212. Corm small, globose. Produced leaves 3–4, linear, glabrous, moderately firm, 1–$1\frac{1}{2}$ ft. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad. Stem moderately stout, terete, $1\frac{1}{2}$ ft. long, bearing 2 reduced leaves. Spike lax, equilateral, 3–4 in. long; flowers erecto-patent; spathe-valves oblong-lanceolate, subscariose, the lower 1 in. long. Perianth pale red, 1 in. long; tube funnel-shaped, nearly straight; upper segments oblong, obtuse, as long as the tube; lower smaller. Stamens nearly as long as the upper segments; anthers linear, $\frac{1}{4}$ in. long.

Mozamb. Dist. British Central Africa: Nyasaland; on the top of Mount Direndi, near Blantyre, 5000 ft., *Buchanan*, 140!

3. **G. laxiflorus,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 268. Corm globose, $\frac{1}{2}$–$\frac{3}{4}$ in. diam.; tunics brown, membranous. Leaves linear, rigid, glabrous, falcate, 6–15 in. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad, with thickened stramineous midrib and edges. Stem 1 ft. long, simple or forked. Spikes very lax, few-flowered, not secund; outer spathe-valve green,

oblong-lanceolate, acute or obtuse, $\frac{1}{2}$–$\frac{3}{4}$ in. long in the lower flowers. Perianth light rose-purple, $1\frac{1}{2}$ in. long; tube curved, broadly funnel-shaped, $\frac{1}{2}$ in. long; upper segments oblong, obtuse, twice as long as the tube; 3 lower scarcely different. Stamens rather shorter than the segments. Capsule obovoid-oblong, $\frac{3}{4}$ in. long.—**Handb. Irid. 211**; Engl. Hochgebirgsfl. Trop. Afr. 177.

Lower Guinea. Angola: Huilla; grassy swamps near the Lopollo Brook, *Welwitsch*, 1536!

4. **G. tritonioides,** *Baker in Kew Bulletin*, 1895, 74. Corm not seen. Stem $1\frac{1}{2}$–2 ft. long including the inflorescence, simple or forked from the middle, terete, moderately stout, bearing only 2–3-superposed leaves with short rigid linear free points, the longest 3–4 in. long, $\frac{1}{6}$ in. broad. Spike secund, 6–8 in. long, very lax in the lower part; upper outer spathe-valves oblong; lower green, lanceolate, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Perianth $1\frac{1}{2}$ in. long, apparently pink or pale lilac; tube curved, narrowly funnel-shaped, $\frac{1}{2}$ in. long; segments oblong, subequal, acute, 1 in. long, $\frac{1}{3}$ in. broad. Stamens half as long as the perianth-limb.

Mozamb. Dist. British Central Africa: Urungu; Fwambo, *Carson*, 37 of 1893 collection!

5. **G. gracillimus,** *Baker in Kew Bulletin*, 1895, 74. Corm very small, globose; tunics of reticulated strong fibres. Stem very slender, terete, 1–$1\frac{1}{2}$ ft. long, bearing only 2 leaves above the middle with long sheaths and rigid subulate free tips 2–3 in. long. Spike secund, few-flowered, 2–3 in. long; outer spathe-valve lanceolate, green, rigid, $\frac{1}{2}$ in. long in the lower flowers. Perianth pale lilac, $\frac{3}{4}$–1 in. long; tube curved, narrowly funnel-shaped, $\frac{1}{3}$ in. long; upper segments oblong, acute, twice as long as the tube; lower as long, but rather narrower. Stamens half as long as the limb; anthers linear, $\frac{1}{4}$ in. long.

Mozamb. Dist. British Central Africa: Urungu; Fwambo, *Carson*, 118 of 1893 collection!

6. **G. aphanophyllus,** *Baker.* Corm small, globose; tunics of parallel fibres, reticulated upwards. Stem slender, terete, $\frac{1}{2}$–1 ft. long, bearing above the middle only 2 sheathing leaves with very short erect linear free tips. Spike lax, secund, 3 in. long; spathe-valves lanceolate, green or subscariose, the lower $\frac{1}{2}$ in. long. Perianth white, under 1 in. long; tube slender, curved, $\frac{1}{4}$ in. long; upper segments oblong, obtuse, cucullate, twice as long as the tube; 3 lower as long, oblanceolate. Stamens nearly as long as the upper segments; anthers linear, as long as the filaments.

Mozamb. Dist. British Central Africa: Urungu; Tanganyika Plateau, *Carson!*

7. **G. Whytei,** *Baker.* Corm globose, 1 in. diam.; tunics of thick parallel strands. Produced root-leaves none. Stem slender, terete, 1 ft. long; sheaths several, with short free tips. Spike secund, reaching a length of $\frac{1}{2}$–1 ft.; bracts firm, the upper oblong, the lower lanceolate-navicular, $\frac{3}{4}$–1 in. long. Perianth-tube curved, $\frac{1}{3}$ in. long;

3 upper segments cucullate, oblong, obtuse, $\frac{1}{2}$–$\frac{5}{8}$ in. long; lower as long or a little longer, with a small blade and long slender claw. Stamens nearly as long as the upper segments.

Mozamb. Dist. British Central Africa: **Nyasaland**; Mount Zomba and Mount Malosa, 4000–6000 ft., *Whyte!*

8. **G. atropurpureus,** *Baker in Journ. Bot.* 1876, 335. Corm globose, $\frac{3}{4}$ in. diam.; tunics of parallel fibres, reticulated upwards. Leaves about 3, superposed, with very short linear rigid free tips adpressed to the stem. Stem slender, terete, 1–1$\frac{1}{2}$ ft. long. Spike lax, secund, 2–6 in. long; spathe-valves green, lanceolate, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Perianth bright dark purple, 1 in. long; tube curved, narrowly funnel-shaped, $\frac{1}{3}$ in. long; upper segments obovate, obtuse, longer than the tube; 3 lower oblanceolate, with a long distinct claw. Stamens nearly as long as the upper segments. Capsule clavate, oblong, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Seeds broadly winged.—Handb. Irid. 211.

Mozamb. Dist. Portuguese East Africa: Morambala Mountain, 1800–3000 ft., *Kirk!* British Central Africa: Manganja Hills, *Waller!* Mount Sochi, *Scott-Elliot*, **8551**! Mount Malosa, 4000–6000 ft., *Whyte!* Mount Zomba and vicinity 2500–3500 ft., *Whyte!*

9. **G. cœrulescens,** *Baker in Trans. Linn. Soc. ser. 2, Bot.* i. 267. Corm globose, $\frac{1}{2}$–$\frac{3}{4}$ in. diam.; tunics of strong fibres. Produced leaves 1–2, rigid, linear, suprabasal; free blade 3–4 in. long, $\frac{1}{12}$ in. broad. Stem very slender, terete, 1–1$\frac{1}{2}$ ft. long, with 2–3 reduced sheathing leaves above the middle. Flowers 2–3 in a lax, secund spike; outer spathe-valve oblong, green, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Perianth dull purple, 1 in. long; tube curved; limb as long as the tube; upper segments oblong, with a cuneate base, $\frac{1}{4}$–$\frac{1}{3}$ in. broad; 3 lower narrower. Stamens nearly as long as the limb.—Handb. Irid. 211.

Lower Guinea. Angola: Huilla; near Lopollo, *Welwitsch*, 1537!

10. **G. pubescens,** *Pax in Engl. Jahrb.* xv. 154. Corm small, globose. Leaves all densely pubescent on both sides; lower linear, 1 ft. long, $\frac{1}{4}$ in. broad; upper reduced. Stem terete, 2–2$\frac{1}{2}$ ft. long, including the spike. Spike simple, secund, 8–10-flowered, 8–10 in. long; spathe-valves lanceolate, acuminate, scariose, glabrous, about 1 in. long. Perianth violet-purple, above 1 in. long; limb twice as long as the funnel-shaped tube; upper segments oblong, obtuse; lower narrow and rather shorter. Stamens half as long as the limb.

Lower Guinea. Angola: near Malange, *Teuscz*, 280.

No specimen in the Kew Herbarium.

11. **G. zambesiacus,** *Baker, Handb. Irid.* 212. Corm small, globose; tunics of fine parallel fibres. Produced leaves 3, narrowly linear, moderately firm, glabrous; the lower above 1 ft. long, $\frac{1}{12}$ in. broad. Stem very slender, 1–1$\frac{1}{2}$ ft. long. Spike very lax, secund, 3–4 in. long; outer spathe-valves lanceolate, brown, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Perianth pale purple, 1 in. long; tube curved, $\frac{1}{3}$ in. long; upper

segments oblong, cuneate, twice as long as the tube. Stamens nearly as long as the upper segments; anthers linear, $\frac{1}{4}$ in. long.

Mozamb. Dist. Portuguese East Africa: mountains east of Lake Nyasa, *Johnson!* British Central Africa: Nyasaland; near Blantyre, *Last!*

12. **G. luridus,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 267. Corm globose, 1 in. diam.; tunics of parallel fibres, reticulated upwards. Produced leaves 3–4, narrowly linear, erect, firm, 1 ft. long, $\frac{1}{8}$ in. broad. Stem slender, terete, 1 ft. long, bearing 2 reduced leaves. Spike very lax, secund, 1 ft. long, 10–12-flowered; outer spathe-valves oblong-lanceolate, green, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Perianth dull purple, 1 in. long, tube curved; upper segment as long as the tube, oblong, obtuse, with a cuneate base, $\frac{1}{4}$–$\frac{1}{3}$ in. broad; lower segments smaller, with a narrow claw. Stamens nearly as long as the upper segments.—Handb. Irid. 211.

Lower Guinea. Angola: Huilla; subtemperate region near Lopollo, in maize fields, *Welwitsch,* 1533!

13. **G. masukuensis,** *Baker in Kew Bulletin,* 1897, 283. Corm not seen. Root-leaves linear, rigid, glabrous, $1\frac{1}{2}$ ft. long, $\frac{1}{4}$ in. broad, with thickened stramineous veins and margins. Stem above 1 ft. long, sometimes forked, bearing a few reduced leaves. Spike lax, secund, 6–9 in. long; outer spathe-valves firm, green, oblong or oblong-lanceolate, $\frac{3}{4}$–1 in. long. Perianth lilac, 1 in. long; tube short, much curved; upper segments oblong, obtuse, conspicuously cucullate, $\frac{3}{4}$ in. long; lower rather shorter, with a small brown-black claw and a long narrow blade. Stamens nearly as long as the upper segments.

Mozamb. Dist. British Central Africa: Nyasaland; Masuku Mountains, *Whyte!*

Described from specimens grown in a garden at Zomba.

14. **G. gregarius,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 268. Corm globose, $\frac{1}{2}$–$\frac{3}{4}$ in. diam.; tunics of fine fibres. Leaves 5–6, sub-basal, linear, firm, glabrous, 6–9 in. long, $\frac{1}{8}$–$\frac{1}{4}$ in. broad. Stem 1–$1\frac{1}{2}$ ft. long, bearing a few reduced leaves. Spike simple, secund, moderately dense, 10–12-flowered; outer spathe-valve lanceolate, firm, greenish-brown, 1 in. long in the lower flowers. Perianth yellow, 1–$1\frac{1}{4}$ in. long, with two small violet marks at the throat; tube curved, broadly funnel-shaped, $\frac{1}{2}$ in. long; upper segments oblong, obtuse, as long as the tube; lower narrower with a narrow claw. Stamens rather shorter than the perianth-limb; anthers $\frac{1}{3}$ in. long.—Handb. Irid. 210.

Lower Guinea. Angola: Pungo Andongo; on the higher rocks of Serra de Pedras de Guinga, in tufts of 4–10 plants, *Welwitsch,* 1528!

15. **G. zanguebaricus,** *Baker in Kew Bulletin,* 1897, 282, *under G. vemulosus.* Corm not seen. Produced leaves 3, linear, suprabasal, moderately firm, the lower 6–9 in. long, $\frac{1}{6}$ in. broad, the ribs and edges not thickened. Stem very slender, terete, 1 ft. long, bearing 1 reduced leaf. Spike lax, secund, 5–6-flowered; outer spathe-valves green, lanceolate, 1 in. long in the lower flowers. Perianth bright pink,

$1\frac{3}{4}$–2 in. long; tube slender, rather curved, shorter than the limb; upper segments oblanceolate-oblong, obtuse, 1–$1\frac{1}{4}$ in. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad; lower as long, but narrower. Stamens $\frac{1}{2}$ in. shorter than the upper segments.—*G. Kirkii*, Baker, Handb. Irid. 222, not in Gard. Chron. 1890, viii. 524.

Mozamb. Dist. Zanzibar, *Kirk !*

16. **G. venulosus,** *Baker in Kew Bulletin*, 1897, 282. Corm small, globose. Stem slender, $1\frac{1}{2}$ ft. long, with 6–9 streaths with rather long, narrowly linear, erect, free tips. Spike lax, secund, 3–6 in. long; lower outer spathe-valves lanceolate, 1–$1\frac{1}{4}$ in. long. Perianth-tube slightly curved, $\frac{1}{2}$ in. long; upper segments oblong, subacute, not cucullate, $1\frac{1}{4}$ in. long, beautifully veined with claret-purple on a white ground; 3 lower nearly as large. Stamens rather more than half as long as the perianth-limb. Capsule oblong, $\frac{3}{4}$ in. long.

Mozamb. Dist. British Central Africa: Nyasaland; Tanganyika Plateau, at Fort Hill, 3500–4000 ft., *Whyte !* Mesuku Plateau, 6500–7000 ft., *Whyte !*

17. **G. brevicaulis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 267. Corm globose. 1 in. diam.; tunics finely fibrous. Leaves linear, firm, glabrous; the lower $\frac{1}{2}$–1 ft. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad. Stem slender, terete, 6–8 in. long, with 1–2 reduced leaves. Spathe lax, secund, 6–9 in. long, many-flowered; outer spathe-valve oblong, green, $\frac{1}{2}$–$\frac{3}{4}$ in. long in the lower flowers. Perianth violet-purple, 1 in. long; tube curved, narrowly funnel-shaped; limb as long as the tube; upper segments oblong-spathulate, obtuse; 3 lower smaller, with narrower claws. Stamens a little shorter than the upper segments; anthers $\frac{1}{3}$ in. long.—Handb. Irid. 211; Engl. Hochgebirgsfl. Trop. Afr. 177.

Lower Guinea. Lower Congo; Stanleypool, *Büttner*, 517. Angola: Huilla; subtemperate region between Lopollo and Humpata, 3800–5500 ft., in damp sandy pastures, *Welwitsch*, 1534!

18. **G. Hanningtoni,** *Baker*, *Handb. Irid.* 212. Corm not seen. Produced leaves 4–5, sub-basal, linear, moderately firm, the longest 1 ft. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad. Stem 9–12 in. long, bearing 2–3 reduced sheathing leaves. Spike dense, secund, $\frac{1}{4}$–1 ft. long; spathe-valves lanceolate, rigid, imbricate, the lower 1–$1\frac{1}{2}$ in. long. Perianth dark red-purple, 1–$1\frac{1}{4}$ in. long; tube slender, $\frac{1}{4}$–$\frac{1}{3}$ in. long; limb horizontal, nearly 1 in. long; upper segments oblong, obtuse, $\frac{1}{4}$ in. broad; 3 lower as long, but narrower, with a narrow claw. Stamens nearly as long as the perianth-limb; anthers linear, $\frac{1}{4}$ in. long.

Mozamb. Dist. German East Africa, *Hannington !* British Central Africa: Urungu; Abercorn, *Carson*, 24 of 1893 collection! between Lake Tanganyika and Lake Rukwa, 6000 ft., *Nutt !* North Nyasaland, *Nicholson !*

19. **G. Grantii,** *Baker*, *Handb. Irid.* 206. Corm globose, 1 in. diam.; tunics of parallel strands of matted fibres. Produced leaves 3, linear, suprabasal, moderately firm, the lowest under 1 ft. long, $\frac{1}{6}$ in. broad low down. Stem slender, terete, 2–3 ft. long. Spike lax, secund, 6–8-flowered, 6–8 in. long; spathe-valves green, lanceolate, the lower

outer 2 in. long. Perianth yellowish (*Grant*), 2½ in. long; tube 1 in. long, cylindrical in the lower half, curved; segments oblanceolate-oblong; the 3 upper not at all cucullate, ½ in. broad; the 3 lower as long, similar. Stamens distinctly shorter than the upper segments; anthers linear, ½ in. long.—*G. angustus*, Baker in Trans. Linn. Soc. xxix. 154, not of Linn.

Mozamb. Dist. German East Africa: by hedges and watery places, 4000 ft., *Speke & Grant!*

20. **G. nyikensis,** *Baker in Kew Bulletin*, 1897, 283. Corm small, globose. Stem slender, 1 ft. long, bearing 6–8 superposed, narrowly linear, firm, erect leaves, the lowest 1 ft. long, ⅛ in. broad. Spike moderately lax, 3–6 in. long; spathe-valves lanceolate, purple, 1–1½ in. long. Perianth-tube curved, funnel-shaped, ½ in. long; limb creamy-white, veined with red, and tinged with pink; upper segments oblong, subacute, not cucullate, 1½ in. long; lower not much smaller. Stamens not reaching halfway up the perianth-limb.

Mozamb. Dist. British Central Africa: Nyasaland; Nyika Plateau, 6000–7000 ft., *Whyte!* between Mpata and Tanganyika Plateau, 2000–3000 ft., *Whyte!*

21. **G. erectiflorus,** *Baker in Kew Bulletin*, 1895, 293. Corm medium-sized. Produced leaves 2–3, linear, rigid, glabrous, 1–1½ ft. long, ¼ in. broad, with thickened stramineous midrib and edges. Stem slender, terete, 1 ft. long, bearing 1–2 reduced leaves. Spike lax, equilateral, 4–5 in. long; flowers erect; spathe-valves lanceolate, subscariose, brownish, the lower 1–1½ in. long. Perianth 2–2¼ in. long, white, veined and flushed with bright purple; tube slender, nearly straight, 1 in. long; upper segments oblanceolate-oblong, subobtuse, not cucullate, lower narrower, with a long claw. Stamens nearly as long as the upper segments.

Mozamb. Dist. British Central Africa: Liendwe, south of Lake Tanganyika, *Carson*, 1 of 1894 collection!

22. **G. caudatus,** *Baker in Kew Bulletin*, 1895, 74. Corm not seen. Produced leaves 3–4, suprabasal, linear, erect, moderately firm, the longest 1 ft. long, ⅛–⅙ in. broad. Stem very slender, simple, terete, 1–1½ in. long including the spike. Spike lax, erect, few-flowered, not secund; outer spathe-valves lanceolate, green, 1–1½ in. long. Perianth pink, 2–2½ in. long; tube scarcely curved, narrowly funnel-shaped, under 1 in. long; segments of the limb oblong-lanceolate, caudate. Stamens more than half as long as the limb; anthers linear, ½ in. long.

Mozamb. Dist. British Central Africa: Urungu; Abercorn, *Carson*, 19 of 1893 collection!

Nearly allied to *G. oligophlebius*.

23. **G. oligophlebius,** *Baker in Kew Bulletin*, 1895, 73. Corm not seen. Produced leaves 4–5, linear, erect, moderately firm, 1–1½ ft. long, ¼–⅓ in. broad; veins and edges not thickened. Stem slender,

terete, simple, including the spike about as long as the leaves. Spike very lax, not secund, few-flowered, 4–6 in. long; flowers suberect; outer spathe-valves firm, green, lanceolate, 1½–2 in. long in the lower flowers. Perianth pale-pink, 3–4 in. long; tube narrowly funnel-shaped, scarcely at all curved, 1 in. long; segments of the limb subequal, oblong-lanceolate, 2–2½ in. long, acute, ½ in. broad at the middle. Stamens half as long as the perianth-limb; anthers linear, ½ in. long.

Mozamb. Dist. German East Africa: between Lake Tanganyika and Lake Rukwa, 6000 ft., *Nutt!* British Central Africa: Urungu; Abercorn, *Carson*, 25 of 1893 collection! Fwambo, 5250 ft., *Nutt!* Nyasaland; Mount Mlanje, *Scott-Elliot*, 8673!

24. **G. pauciflorus,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* ii. 350. Corm medium-sized. Produced leaves 3–4, suprabasal, moderately firm, linear, glabrous, the lower 1 ft. long, ⅓ in. broad. Stem moderately stout, terete, 2–3 ft. long, bearing 1–2 reduced leaves. Spike lax, few-flowered, not secund, 6–8 in. long; spathe-valves lanceolate, green, the lower outer 1½ in. long. Perianth pale yellow, 3 in. long; tube narrowly funnel-shaped, curved, 18–21 lin. long; segments oblong, subacute, 1½ in. long, the upper 3¼ in. broad, not cucullate, the lower narrower. Stamens nearly as long as the upper segments; anthers linear, ⅓ in. long.—Handb. Irid. 206.

Mozamb. Dist. German East Africa: Lower slopes of Mount Kilimanjaro, 2000–3000 ft., *Johnston!*

25. **G. luteolus,** *Klatt in Peters, Reise Mossamb. Bot.* 515. Corm under ½ in. diam. Leaves linear, the longest 2–2½ ft. long, ⅓ in. broad, those above and below it much reduced. Stem including inflorescence 3 ft. long. Spike distichous, with alternate flowers; spathe-valves linear, equal, 1 in. long. Perianth yellowish; tube curved, 1½ in. long; segments ovate, acute, the upper 1 in. long, the 3 lower smaller.

Mozamb. Dist. Portuguese East Africa: Lower Zambesi; in woods near Boror, *Peters.*

26. **G. corneus,** *Oliv. in Trans. Linn. Soc.* xxix. 155, *t.* 100. Corm globose, 1 in. diam.; tunics brown, membranous. Produced leaves 3, linear, rigid, suprabasal, glabrous, 6–9 in. long, ¼–⅓ in. broad. Stem moderately stout, terete, 2 ft. long. Spike simple, few-flowered, very lax; rhachis very flexuose; spathe-valves green, lanceolate, the lowest outer 3–4 in. long. Perianth 2–2½ in. long, transparent, horn-coloured (*Grant*); tube curved, narrowly funnel-shaped, 1 in. long; upper segments cucullate, obovate, with a small distinct cusp; lower oblong, deflexed. Stamens much shorter than the upper segment; anthers linear, ½ in. long.—Baker, Handb. Irid. 222.

Mozamb. Dist. German East Africa: Unyamwezi; Simbab, 4000 ft., in rather moist places, *Speke & Grant!*

27. **G. Newii,** *Baker in Journ. Bot.* 1876, 334. Corm medium-sized, globose. Produced leaves 3–4, firm, linear, the lower 1–1½ ft.

long, $\frac{1}{8}$–$\frac{1}{6}$ in. broad, with a thick stramineous midrib and edges. Stem moderately stout, terete, $1\frac{1}{2}$ ft. long, bearing 1 reduced leaf. Spike lax, few-flowered; spathe-valves green, lanceolate, the lower 2 in. long. Perianth bright yellow, 3–$3\frac{1}{2}$ in. long; tube narrowly funnel-shaped, curved at the apex; upper segments cucullate, suborbicular, cuspidate, 1 in. broad, as long as the tube; lower smaller. Stamens shorter than the upper segments.—Handb. Irid. 214; Engl. Hochgebirgsfl. Trop. Afr. 176.

Mozamb. Dist. German East Africa: Mount Kilimanjaro; last zone of vegetation below the perpetual snow, *New! Volkens*, 975!

May be an extreme form of *G. quartinianus*.

28. **G. splendidus,** *Rendle in Journ. Linn. Soc.* xxx. 406. Produced stem-leaves 4, rigid, linear, with thickened stramineous midrib and edges, the lowest 2 ft. long, $\frac{1}{3}$ in. broad. Stem robust, 3–4 ft. long including the spike. Spike simple, lax, secund, above 1 ft. long, 7–8-flowered; spathe-valves lanceolate, 3 in. long in the lower flowers. Perianth bright crimson, above 4 in. long; tube funnel-shaped, curved, under 2 in. long; dorsal segment suborbicular, $2\frac{1}{2}$ in. long, 20 lin. broad; lateral rather narrower and shorter; 3 lower much smaller. Stamens 1 in. shorter than the upper segment; anthers linear, above $\frac{1}{2}$ in. long.

Mozamb. Dist. German East Africa: Mount Kilimanjaro, above Morang, ascending to 10,000 ft., *Taylor*.

29. **G. multiflorus,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 269. Corm globose, 1–$1\frac{1}{2}$ in. diam.; tunics of fine crisped matted fibres. Produced leaves 4–5, ensiform, glabrous, moderately firm, the lower 9–12 in. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad. Stem moderately stout, terete, 1–$1\frac{1}{2}$ in. long, with 1–2 reduced sheathing leaves. Spike simple, dense, subsecund, 1 ft. long; spathe-valves rigid, lanceolate, imbricate, the lower 1 in. long. Perianth bright purple, $1\frac{1}{4}$ in. long; tube curved, slender dilated at the apex, half as long as the limb; upper segments oblong, obtuse; lower as long, but narrower and unguiculate. Stamens nearly as long as the perianth-limb.—Handb. Irid. 221; Engl. Hochgebirgsfl. Trop. Afr. 177.

Lower Guinea. Angola: Huilla; temperate region, in woods at Monino, *Welwitsch*, 1538!

30. **G. spicatus,** *Klatt in Linnæa*, xxxv. 377. Corm medium-sized. Produced basal leaves 4–5, ensiform, moderately firm, 1–$1\frac{1}{2}$ ft. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad. Stem 2 ft. long, moderately stout, terete, bearing 2–3 reduced sheathing leaves. Spike dense, secund, 8–9 in. long; spathe-valves lanceolate, rigid, greenish-brown, the lower 1 in. long. Perianth bright red-purple, $1\frac{1}{4}$ in. long; tube curved, narrowly funnel-shaped, $\frac{1}{2}$ in. long; upper segments oblong, obtuse, nearly twice as long as the tube, $\frac{1}{3}$ in. broad; lower as long, obovate-unguiculate. Stamens distinctly shorter than the limb; anthers linear, $\frac{1}{4}$ in. long.—Baker, Handb. Irid. 221.

Upper Guinea. Niger Territory: Nupe; near Jeba on the Kworra, *Barter!*

31. **G. brachyandrus,** *Baker in Bot. Mag. t.* 6463. Corm very large, depresso-globose, with areolate brown tunics. Produced leaves basal, rigid, strongly veined, glabrous, with short ensiform free tips, 2–3 in. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad. Stem slender, terete, 1 ft. long, bearing 1–2 reduced leaves. Spike lax, equilateral, 6–8 in. long; spathe-valves lanceolate, membranous, 1–$1\frac{1}{2}$ in. long; flowers suberect. Perianth reddish-white, 2 in. long; tube short, broadly funnel-shaped, nearly straight; segments oblong, acute, subequal, twice as long as the tube, the upper not at all cucullate. Stamens half as long as the perianth-limb; anthers linear.—Handb. Irid. 214.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, *Buchanan !*

Flowered at the Edinburgh Botanic Garden in 1879. No specimen at Kew.

32. **G. benguellensis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 268. Corm small, globose, on a long rhizome; tunics brown-black, membranous. Produced leaves sub-basal, ensiform, rigid, glabrous, 6–9 in. long, 6–8 lin. broad, with thickened stramineous ribs and edges. Stem 1 ft. or more long, bearing 1–2 reduced leaves. Spike lax, secund, 6–8-flowered, 6–8 in. long; outer spathe-valves green, lanceolate, acuminate, 1–$1\frac{1}{4}$ in. long in the lower flowers. Perianth bright red, spotted with orange-purple at the throat, $1\frac{1}{2}$–2 in. long; tube curved, 8–9 lin. long; limb horizontal, rather longer than the tube; upper segments ovate, acute, not cucullate, $\frac{1}{2}$ in. broad; 3 lower lanceolate-spathulate, deflexed. Stamens rather shorter than the limb. Capsule oblong.—Handb. Irid. 221; Engl. Hochgebirgsfl. Trop. Afr. 177.

Lower Guinea. Angola: Huilla; temperate region, in dry pastures among bushes near Lopollo, 3800–5500 ft., *Welwitsch*, 1540 !

33. **G. decoratus,** *Baker in Journ. Bot.* 1876, 333. Corm globose, 1 in. diam.; tunics reticulated in the upper half. Produced basal leaves 4–5, ensiform, glabrous, moderately firm, the longest $1\frac{1}{2}$–2 ft. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad. Stem 2 ft. long, moderately stout, terete, bearing 2–3 reduced leaves. Spike lax, secund, simple, reaching 1 ft. in length; spathe-valves lanceolate, green, the lower outer $1\frac{1}{2}$–2 in. long. Perianth bright red, 3 in. long; tube curved, cylindrical, dilated at the apex, half as long as the limb; upper segments oblong, obtuse, not cucullate, $\frac{1}{2}$ in. broad; 3 lower as long, but much narrower and distinctly unguiculate, marked on the disc with a large spathulate bright yellow spot. Stamens $\frac{1}{3}$ in. shorter than the upper segments; anthers large, linear. Capsule clavate-oblong, $1\frac{1}{2}$ in. long.—Handb. Irid. 222; N. E. Brown in Gard. Chron. 1890, viii. 210.

Mozamb. Dist. Portuguese East Africa: Morambala Mountain, from the foot up to 2000 ft., *Kirk !* Shire Valley, *Waller !*

Introduced into cultivation in 1887.

34. **G. sulphureus,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* ii. 350. Corm globose, 1 in. diam. Stem 1 ft. long, stout, bearing 3–4 sheathing leaves with short free erect rigid lanceolate tips not more than 2–3

in. long, under $\frac{1}{2}$ in. broad. Spike very lax, not secund, 5–6 in. long; spathe-valves green, lanceolate, the lower $1\frac{1}{2}$ in. long. Perianth bright yellow, $2\frac{1}{2}$–3 in. long; tube ascending, slightly curved, narrowly funnel-shaped, $1\frac{1}{2}$ in. long; segments oblong or obovate, upper cucullate, as long as the tube; the 3 lower smaller. Stamens shorter than the upper segments.—Handb. Irid. 213; Engl. Hochgebirgsfl. Trop. Afr. 176.

Mozamb. Dist. German East Africa: Mount Kilimanjaro, 5000 ft., *Johnston!*

35. **G. quartinianus,** *A. Rich. Tent. Fl. Abyss.* ii. 306. Corm globose, 1–$1\frac{1}{2}$ in. diam.; tunics of fine parallel strands of matted fibres. Produced leaves 3–4, linear or ensiform, rigid, the lower 1–$1\frac{1}{2}$ ft. long, $\frac{1}{3}$–$\frac{3}{4}$ in. broad. Stems robust, 2–3 ft. long. Spikes very lax, $\frac{1}{2}$–1 ft. long, 6–9-flowered; spathe-valves green, lanceolate, the lower outer $1\frac{1}{2}$–2 in. long. Perianth 3–$3\frac{1}{2}$ in. long, varying from blood-red to pale yellow; tube curved, narrowly funnel-shaped, $1\frac{1}{2}$ in. long, $\frac{1}{3}$–$\frac{1}{2}$ in. diam. at the throat; upper segments conspicuously cucullate, broad, oblong, subobtuse, $1\frac{1}{2}$–2 in. long, $\frac{3}{4}$–1 in. broad; lower much smaller and deflexed. Stamens nearly as long as the upper segments; anthers linear, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Capsule clavate-oblong, above 1 in. long. Seeds broadly winged.—Bot. Mag. t. 6739; Handb. Irid. 213; Engl. Hochgebirgsfl. Trop. Afr. 175; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 86. *G. kilimandscharicus*, Pax in Engl. Hochgebirgsfl. Trop. Afr. 175. *G. primulinus*, Baker in Gard. Chron. 1890, viii. 122 (flowers plain primrose yellow); *G. angolensis*, *G. andongensis* and *G. Welwitschii*, Baker in Trans. Linn. Soc. ser. 2, Bot. i. 268–69. *G. saltatorum*, Baker in Trans. Linn. Soc. xxix. 155. *G. taylorianus*, Rendle in Journ. Linn. Soc. xxx. 405.

Nile Land. Abyssinia: Tigre; in fields around Adowa, *Quartin-Dillon.* Shire: in moist places, *Quartin-Dillon;* and without precise locality, *Parkyns!* British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 1972! Niamniam: Nganye, *Schweinfurth*, 3938! Gumango Hill, *Schweinfurth*, 3880! Uganda: in grassy jungle, *Wilson*, 39! Ankole and Buddu, *Scott-Elliot*, 7513! Ruwenzori: Yeria, *Scott-Elliot*, 7768! Lykipia, 6000–8000 ft., *Thomson!* Ukamba, 5000–6000 ft., *Scott-Elliot*, 6481! near Mombasa, *Hildebrandt*, 2013! Nyika country near Mombasa, *Wakefield!*

Lower Guinea. Lower Congo: Stanley Pool, *Callewaert!* Angola: Bembe, *Monteiro!* Golungo Alto and Pungo Andongo, in grassy places, *Welwitsch*, 1527! 1527B! 1530! Pungo Andongo: on the higher rocks at the fort, 2400–3800 ft., *Welwitsch*, 1529! Huilla: on wooded hills around Lopollo, *Welwitsch*, 1541! meadows in woods between Lopollo and Lake Ivantalla, *Welwitsch*, 1535!

Mozamb. Dist. Zanzibar, cultivated specimen, *Kirk!* German East Africa: Kilimanjaro, 7000 ft., *Johnston*, 3! 179! *Volkens*, 339! Usambara; Kwa Mshuza (Handei), *Holst*, 9060! Usagara Mountains: cultivated specimen, *Last!* Karagwe, 5000 ft., *Speke & Grant*, 473! Portuguese East Africa: Zambesi Delta; between Mazaro and the River Pangaze, *Kirk*, 219! Luabo River, *Kirk!* British Central Africa: Urungu; Fwambo, 5250 ft., *Nutt!* Nyasaland; Masuka Plateau, 6500–7000 ft., *Whyte!* Kondowe to Karonga, 2000–6000 ft., *Whyte!* Mount Zomba, *Whyte!* River Mandala, *Scott!* and without precise locality, *Buchanan*, 847! 1405!

36. **G. Buettneri,** *Pax in Engl. Jahrb.* xv. 155. Corm large, globose. Produced leaves 4–5, rigid, glabrous, ensiform, with thickened stramineous ribs and edges, the longest 2–2½ ft. long, 1–1¼ in. broad. Peduncle stout, terete, 2–3 ft. long, with 1–2 reduced leaves. Spike very lax, simple, 1 ft. long; spathe-valves lanceolate, green, the lowest 2 in. long. Perianth yellow, minutely spotted with brown, 3–3½ in. long; tube 1½ in. long, narrowly funnel-shaped, curved at the apex; upper segments oblong, subacute, conspicuously cucullate, 1½–2 in. long, 1 in. broad; lower oblong-lanceolate, acuminate, deflexed. Stamens shorter than the upper segments of the perianth; anthers linear, above ½ in. long.—Baker, Handb. Irid. 220.

Upper Guinea. Togoland: near Bismarckburg, *Büttner*, 8! *Kling*, 22.

37. **G. Johnstoni,** *Baker.* Corm not seen. Root-leaves lanceolate, rigid, strongly ribbed, 1 ft. long, above 1 in. broad. Stem with several sheaths with short free tips. Spikes lax, secund, 6–9 in. long; outer spathe-valves lanceolate, brown, 1–1¼ in. long. Perianth bright red; tube funnel-shaped above a cylindrical base, ¾ in. long; upper segments cucullate, oblong, acute, ¾ in. broad; lower much smaller, with a long narrow claw. Stamens a third the length of the upper segments.

Mozamb. Dist. British Central Africa: Nyasaland; Mount Malosa, 4000–6000 ft., *Whyte!* Mount Zomba, 2500–3500 ft., *Whyte!* North Nyasaland, *Nicholson!*

38. **G. Thomsoni,** *Baker, Handb. Irid.* 223. Corm, leaves and lower part of stem not seen. Spikes many-flowered, secund, 3–4 in. long, dense in the upper half; spathe-valves oblong-cuspidate, scariose, ¼–⅓ in. long. Perianth pale red, ¾–1 in. long; tube narrowly funnel-shaped, ¼ in. long; upper segments obovate-unguiculate, twice as long as the tube; lower as long, oblanceolate, with a long narrow claw. Stamens nearly as long as the upper segments; anthers ¼ in. long.

Mozamb. Dist. German East Africa: on the higher plateau north of Lake Nyasa, *Thomson!*

39. **G. flexuosus,** *Baker in Kew Bulletin*, 1894, 390. Corm very small, globose; tunics of matted fibres. Stem slender, terete, flexuose, 1–1½ ft. long, bearing 2–3 sheathing leaves with short narrow linear rigid free tips not more than 2–3 in. long. Spike lax, secund, few-flowered, 3–4 in. long; spathe-valves green, oblong-navicular, ½–¾ in. long. Perianth white tinged with dull purple, 1 in. long; tube narrowly funnel-shaped, ⅓ in. long; upper segments obovate-unguiculate, cucullate, ¼ in. broad; lower rather longer, oblong, with a long narrow claw; blade with a white edge and purple-black spots in the centre. Stamens nearly as long as the upper segments.

Mozamb. Dist. British Central Africa: Urungu; Fwambo, *Carson*, 79 of 1893 collection! between Lake Tanganyika and Lake Nyasa, *Johnston!*

40. **G. unguiculatus,** *Baker in Journ. Linn. Soc.* xvi. 178. Corm small, globose; tunics of fine parallel fibres. Stem slender, terete, 1–1½ ft. long, bearing 2–3 sheathing leaves, with short rigid linear free

tips. Spike very lax, subsecund, 4–8 in. long; spathe-valves green lanceolate, lower outer $\frac{1}{2}$–$\frac{3}{4}$ in. long. Perianth 1–1$\frac{1}{4}$ in. long, white, tinged with greenish-brown; upper segments obovate-unguiculate, obtuse; 3 lower as long or longer, with a small oblong blade and a long narrow claw. Stamens considerably shorter than the upper segments; anthers linear, $\frac{1}{4}$ in. long. Capsule clavate-oblong, $\frac{1}{2}$–$\frac{3}{4}$ in. long.—Handb. Irid. 223. *G. cochleatus*, Baker in Journ. Bot. 1876, 333, not of Sweet.

Upper Guinea. Sierra Leone, *Morson!*

Nile Land. Jur: Jur Ghattas, *Schweinfurth*, 1818! Bongo: South-west of the Tondy River. *Schweinfurth*, 4042!

Mozamb. Dist. British Central Africa: Urungu; Fwambo, *Carson*, 63 and 65 of 1893 collection!

41. **G. Oatesii,** *Rolfe in Oates, Matabeleland, edit.* ii. 410. Corm very small, globose. Stem very slender, terete, 1–1$\frac{1}{2}$ ft. long, bearing only 2–3 superposed sheathing leaves, with short linear free tips. Spike very lax, secund, 3–8 in. long; spathe-valves green, lanceolate, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Perianth white tinged with greenish-brown, 1 in. long; tube slender, curved, $\frac{1}{4}$ in. long; upper segments obovate-unguiculate, cuspidate, cucullate, more than twice as long as the tube; 3 lower as long or longer, with a small oblong acute blade, much shorter than the narrow claw. Stamens nearly as long as the upper segments; anthers linear, as long as the filaments.—Baker, Handb. Irid. 226.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 464! *Scott-Elliot*, 8550! Mount Mlanje, *Whyte!* Matabeleland, *Oates!*

Very near the South African *G. permeabilis*, Delaroche.

42. **G. edulis,** *Burch. ex Ker in Bot. Reg. t.* 169. Corm small, ovoid; tunics of fine parallel strands of matted fibres. Produced leaves 3, firm, narrowly linear, the lower sometimes overtopping the stem. Flowers 8–15 in a lax simple or forked spike; outer spathe-valve oblong-lanceolate, green, $\frac{1}{2}$-$\frac{3}{4}$ in. long. Perianth pale lilac; tube nearly straight, ascending, $\frac{1}{2}$ in. long; segments all furnished with a distinct cusp; upper obovate-unguiculate, $\frac{3}{4}$ in. long; the others shorter, with a small rhomboid blade and long slender claw. Stamens half as long as the perianth.—Baker, Handb. Irid. 225; Schinz in Bull. Herb. Boiss. iv. App. iii. 50.

Lower Guinea. German South-west Africa: Amboland; Grootfontein, *Schinz*, 413!

Also in South Africa.

13. **ANTHOLYZA,** Linn.; Benth. et Hook. f. Gen. Pl. iii. 710.

Perianth long, curved, cylindrical both in the lower and upper half, suddenly dilated at the middle; segments of the limb usually very unequal. Stamens unilateral, contiguous, parallel, arcuate, inserted at the middle of the perianth-tube; filaments filiform; anthers lanceolate-sagittate. Ovary 3-celled; ovules many, superposed; style filiform;

branches short, spreading, entire, cuneate at the tip. Capsule oblong, loculicidally 3-valved. Seeds turgid or discoid, generally winged.—Rootstock a tunicated corm. Leaves linear or ensiform, forming a distichous rosette. Flowers in simple or panicled spikes, usually brightly coloured; spathe-valves usually long, green, lanceolate.

Species about 20, the others South African.

*ANTHOLYZA PROPER. Segments of perianth-limb very unequal.

Free tip of leaves none or very short.

Anthers $\frac{1}{6}$ in. long	1. *A. huillensis.*
Anthers $\frac{1}{4}$ in. long	2. *A. labiata.*
Anthers $\frac{1}{2}$ in. long	3. *A. zambesiaca.*

Free tip of leaves long.

Leaves 3–4	4. *A. abyssinica.*
Leaves 5–6	5. *A. Schweinfurthii.*

**HOMOGLOSSUM. Segments of perianth-limb nearly equal.

Perianth 2 in. long	6. *A. gracilis.*
Perianth 3 in. long	7. *A. watsonioides.*

1. **A. huillensis,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 270. Corm globose, 1 in. diam.; tunics brown, of matted fibres. Stem slender, terete, 6–15 in. long, bearing 2–3 short very narrow linear rigid leaves, with a thickened stramineous midrib and edges. Spike simple, lax, secund, 6–8-flowered; outer spathe-valve oblong, obtuse, firm, green, $\frac{1}{2}$ in. long. Perianth-tube curved, 1 in. long; upper segment oblong, bright red; lateral small, obovate; 3 lower minute. Stamens nearly as long as the upper segment; anthers $\frac{1}{6}$ in. long. Capsule obovoid-oblong, $\frac{1}{2}$ in. long. Seeds discoid, winged.—Handb. Irid. 232; Engl. Hochgebirgsfl. Trop. Afr. 178.

Lower Guinea. Angola: Huilla; temperate region, in open bushy places between Lopollo and Humpata, *Welwitsch,* 1539!

No specimen in the Kew Herbarium.

2. **A. labiata,** *Pax in Engl. Jahrb.* xv. 156. Corm globose; tunics pale brown. Stem slender, terete, above 1 ft. long, with about 5 superposed leaves reduced to mere sheaths. Spike simple, secund, 8-flowered; outer spathe-valve ovate, acute, $\frac{1}{2}$ in. long. Perianth red-purple; tube under $\frac{1}{2}$ in. long; limb bilabiate; upper segment linguiate, obtuse, as long as the tube; 5 lower segments connate into a lower lip, of which the central lobe is long and linear-spathulate. Stamens as long as perianth; anthers $\frac{1}{4}$ in. long. Style shorter than the stamens.

Upper Guinea. Togoland: near Bismarckburg, *Kling,* 209.

No specimen in the Kew Herbarium.

3. **A. zambesiaca,** *Baker, Handb. Irid.* 232. Corm not seen. Stem slender, simple, terete, stiffly erect, bearing 3–4 sheathing superposed leaves with short very narrow free tips. Spikes few-flowered,

lax; spathe-valves lanceolate, green, 1 in. long. Perianth curved, 3 in. long; upper segment oblong-navicular, as long as the tube; lateral small, ovate, acute; 3 lower very minute. Stamens and style nearly as long as the upper segment; anthers linear, $\frac{1}{2}$ in. long.

Mozamb. Dist. Rhodesia: Leshumo Valley, *Holub!*

4. **A. abyssinica,** *Brong. ex A. Rich. Tent. Fl. Abyss.* ii. 306. Corm globose, 1 in. diam.; tunics of fine parallel strands of matted fibres. Produced suprabasal leaves 3–4, linear or ensiform, moderately firm, erect, 1 ft. long, $\frac{1}{4}$–$\frac{3}{4}$ in. broad. Stem simple, subterete, 1–2 ft. long, bearing 1–2 reduced leaves. Spike lax, simple, secund, sometimes 6–8 in. long; outer spathe-valve green, lanceolate, 1–2 in. long. Perianth red, curved, 2 in. long; tube as long as the oblong upper segment; lateral segments ovate, $\frac{1}{2}$ in. long; 3 lower minute, oblong, obtuse. Stamens distinctly shorter than the upper segment; anthers $\frac{1}{4}$ in. long.—Baker, Handb. Irid. 231; Engl. Hochgebirgsfl. Trop. Afr. 177.

Nile Land. Abyssinia: Tigre; Heja, near Adowa, 9000 ft., *Schimper!* Mount Sholoda, near Adowa, *Quartin-Dillon;* between Maigouagoua and Debra Sina, *Quartin-Dillon & Petit*, 114 (240 bis)! and without precise locality, *Schimper,* 842! 1206! Shire, *Quartin-Dillon.*

5. **A. Schweinfurthii,** *Baker in Gard. Chron.* 1894, xv. 588. Corm globose, medium-sized. Leaves 5–6, superposed, linear, thin, the lower 1 ft. long, $\frac{1}{3}$ in. broad. Stem simple, 1 ft. long. Spike simple, lax, many-flowered; outer spathe-valve oblong-lanceolate, $\frac{3}{4}$–1 in. long. Perianth cylindrical, curved, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long, bright red passing into yellow at the base; tube $\frac{3}{4}$ in. long, very slender in the lower half; upper segments lingulate, as long as the tube; 2 lateral segments small, lanceolate; 3 lowest very minute. Stamens and style reaching to the tip of the upper segment; anthers $\frac{1}{6}$ in. long.—Schweinf. in Bull. Herb. Boiss. ii. App. ii. 86, 112.

Nile Land. Eritrea: Ginda Valley; on the heights of Donkollo, 3000 ft., *Schweinfurth,* 126! Mount Alamkale, 5900 ft., *Schweinfurth & Riva,* 1466! Mount Koube, 6000 ft., *Schweinfurth & Riva,* 1510! Mount Bizen, 6500 ft., *Schweinfurth & Riva,* 1865! Ambelaco, near Maldi, 6500 ft., *Schweinfurth,* 143! cultivated specimen, *Schweinfurth!*

6. **A. gracilis,** *Pax in Engl. Hochgebirgsfl. Trop. Afr.* 177. Corm globose, 1 in. diameter; tunics of parallel strands of matted fibres. Produced leaves 3–4, narrowly linear, rigid, the lower $1\frac{1}{2}$ ft. long, $\frac{1}{8}$ in. broad. Stem slender, simple, terete, $1\frac{1}{2}$–2 ft. long. Flowers few in a lax secund spike; outer spathe-valve lanceolate, firm, green, 1–$1\frac{1}{2}$ in. long. Perianth bright crimson, much curved, 2 in. long; segments of the limb nearly equal, oblong-lanceolate, acute, $\frac{3}{4}$ in. long. Stamens a little shorter than perianth-limb; anthers $\frac{1}{6}$ in. long. Capsule oblong, $\frac{3}{4}$ in. long. Seeds flat, with a broad membranous wing.—Baker, Handb. Irid. 232. *Gladiolus watsonioides,* var. *minor,* Baker, Handb. Irid. 227.

Mozamb. Dist. German East Africa: Mount Kilimanjaro, 8000–13,000 ft., *Johnston,* 124! *Volkens,* 1308! *Meyer.*

7. **A. watsonioides,** *Baker.* Corm globose, 1 in. diam. Produced leaves 3–4, linear, moderately firm, the lower 1½ ft. long, ¼–⅓ in. broad. Stem 1½–2 ft. long, simple, terete, bearing 1–2 reduced leaves. Spike very lax, secund, sometimes 6–9 in. long; outer spathe-valves lanceolate, green, 1½–2 in. long. Perianth bright crimson; tube curved, 1½ in. long, ¼ in. diam. in upper half; segments oblong, acute, upper one the longest, 1½ in. long, ½ in. broad, the others similar, but rather smaller. Stamens distinctly shorter than upper segment of the perianth; anthers ¼ in. long. Capsule oblong, 1 in. long. Seeds broadly winged.—*Gladiolus watsonioides*, Baker in Journ. Linn. Soc. xxi. 405; Bot. Mag. t. 6919; Handb. Irid. 226; Rendle in Journ. Linn. Soc. xxx. 406. *G. Garnieri*, Klatt in Decken, Reisen Bot. 73.

Mozamb. Dist. German East Africa: Mount Kilimanjaro, 8500–11,000 ft., *Thomson! Johnston*, 33! 148! *Decken & Kersten*, 120, *Meyer*, 278. Mount Kenia, in Alpine pastures, 10,000–11,000 ft., *Gregory.*

ORDER CXXXVII. AMARYLLIDEÆ. (By J. G. Baker.)

Flowers hermaphrodite, regular or slightly irregular. Perianth corolline, superior, with or without a tube above the ovary; segments subequal in the Tropical African genera. Stamens usually 6, opposite the segments of the perianth, inserted at their base or in the tube; filaments filiform, free or united in a cup at the base; anthers 2-celled, with longitudinal introrse dehiscence. Ovary inferior, usually 3-celled; ovules anatropous, superposed. Style subulate. Stigma capitate or trifurcate. Fruit capsular or baccate. Seeds globose or flattened; albumen copious, usually fleshy; embryo small, central.—Herbs, rarely undershrubs. Rootstock a bulb or tuber. Leaves usually all radical. Inflorescence umbellate, rarely solitary or racemose. Flowers various in colour, glabrous, hairy or viscous outside.

Species 800, widely spread through the Tropical and Temperate zones of both hemispheres.

TRIBE I. **Hypoxideæ.** *Herbs with a tuberous rootstock and naked peduncles. Flower, peduncle and leaves usually hairy.*

Perianth cut down to the ovary	1. HYPOXIS.
Perianth with a tube above the ovary	2. CURCULIGO.

TRIBE II. **Amaryllideæ.** *Herbs with a tunicated bulb and naked peduncles. Leaves, peduncle and flowers glabrous.*

Perianth with scales at the throat	3. CRYPTOSTEPHANUS.
Perianth without small scales at the throat.	
Filaments free down to the base.	
Seeds discoid or angled, with a black or brown testa.	
Ovules many in a cell.	
Perianth with a long tube and short limb .	4. CYRTANTHUS.
Perianth lobes about as long as the tube .	5. STENOLIRION.
Perianth with a short tube and long limb .	6. HIPPEASTRUM.
Ovules two in a cell.	
Fruit baccate	7. HÆMANTHUS.

Fruit capsular . . . . . 8. BUPHANE.
Seeds globose, with a green testa.
Fruit indehiscent.
Perianth-tube long . . . . . 9. CRINUM.
Perianth-tube short . . . . . 10. AMMOCHARIS.
Fruit a 3–valved capsule.
Capsule turbinate, acutely angled . . . 11. BRUNSVIGIA.
Capsule globose, obtusely angled . . . 12. NERINE.
Filaments united in a basal cup.
Seeds flat, with a black or brown testa . . 13. PANCRATIUM.
Seeds globose, with a green testa . . . 14. HYMENOCALLIS.

TRIBE III. **Vellosieæ.** *Undershrubs or herbs, with solitary flowers, glandular outside. Rootstock none.*

The only genus . . . . . 15. VELLOSIA.

1. HYPOXIS, Linn.; Benth. et Hook. f. Gen. Pl. iii. 717.

Perianth cut down to the ovary; segments 6, subequal, spreading. Stamens 6, inserted at the base of the perianth-segments; filaments short, subulate; anthers linear or lanceolate, basifixed or obscurely dorsifixed. Ovary clavate or turbinate, 3-celled, not rostrate; ovules superposed, few or many in a cell; style short, columnar. Stigmas 3, connate or distinct. Capsule usually 3-celled, membranous, splitting round the middle or into 3 valves. Seeds small, globose; testa crustaceous, usually black and shining; hilum lateral, more or less distinctly beaked; embryo included in the fleshy or farinaceous albumen.—Rootstock a tuber or corm. Leaves all radical, persistent, linear or ensiform. Flowers solitary, corymbose or racemose, in the Tropical African species yellow and tinged with green and hairy outside.

Species 60, spread widely through both hemispheres, concentrated in South Africa.

Flowers solitary.
Perianth-segments $\frac{1}{6}$ in. long . . . . . 1. *H. monanthos.*
Perianth-segments $\frac{1}{4}$ in. long . . . . . 2. *H. kilimandscharica.*
Perianth-segments $\frac{1}{3}$–$\frac{1}{2}$ in. long . . . . 3. *H. Schimperi.*
Flowers corymbose.
Flowers small.
Leaves not rigid . . . . . 4. *H. angustifolia.*
Leaves rigid.
Leaves subterete . . . . . 5. *H. canaliculata.*
Leaves narrowly linear . . . . . 6. *H. malosana.*
Leaves linear . . . . . 7. *H. cuanzensis.*
Flowers larger.
Peduncle short . . . . . 8. *H. villosa.*
Peduncle long . . . . . 9. *H. gregoriana.*
Flowers racemose.
Raceme lax.
Leaves $\frac{1}{6}$–$\frac{1}{4}$ in. broad.
Bracts minute . . . . . 10. *H. nyasica.*
Bracts large . . . . . 11. *H. angolensis.*

Leaves $\frac{1}{2}$–$\frac{3}{4}$ in. broad.	
Pedicels $\frac{1}{4}$ in. long	12. *H. obtusa.*
Pedicels $\frac{1}{2}$–$\frac{3}{4}$ in. long	13. *H. laikipiensis.*
Raceme dense.	
Pedicels scarcely any	14. *H. subspicata.*
Pedicels very short	15. *H. Fischeri.*
Pedicels $\frac{1}{2}$–1 in. long	16. *H. polystachya.*

1. **H. monanthos,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 266, Tuber oblong, perennial, $\frac{1}{4}$ in. diam. Leaves 4–5 to a tuber, linear, slightly pilose, 4–5 in. long, $\frac{1}{2}$–1 lin. broad low down. Peduncles 1–3 to a tuber, 1-flowered, $1\frac{1}{2}$–2 in. long, very slender, slightly pilose. Perianth-limb yellow, $\frac{1}{6}$ in. long; outer segments pilose and green on the back. Stamens half as long as the perianth. Capsule oblong, $\frac{1}{4}$ in. long.—Baker in Journ. Linn. Soc. xvii. 108; Engl. Hochgebirgsfl. Trop. Afr. 170.

Lower Guinea. Angola: Huilla; Lopollo, in pastures near streams, *Welwitsch!*

No specimen in the Kew Herbarium.

2. **H. kilimanjarica,** *Baker.* Tuber globose, perennial, $\frac{1}{4}$–$\frac{1}{3}$ in. diam.; relics of old leaves brown, membranous. Leaves 4–5 to a tuber, firm, narrowly linear, nearly or quite glabrous, 3–6 in. long, $\frac{1}{2}$ lin. broad. Peduncles solitary, very short, 1-flowered. Perianth-segments yellow, $\frac{1}{4}$ in. long; outer green and hairy outside. Stamens more than half as long as the perianth-segments. Ovary turbinate, hairy, $\frac{1}{8}$ in. long.

Mozamb. Dist. German East Africa: Kilimanjaro; above Mamba, 5000 ft., *Volkens,* 781!

3. **H. Schimperi,** *Baker in Journ. Linn. Soc.* xvii. 110. Tuber oblong, $\frac{1}{2}$–$\frac{3}{4}$ in. diam., crowned by copious fibres. Leaves about 4 to a tuber, linear, erect, firm, nearly glabrous, 6–9 in. long, $\frac{1}{8}$–$\frac{1}{4}$ in. broad. Peduncles 3 to a tuber, slender, 1-flowered, much shorter than the leaves. Perianth-segments yellow, lanceolate, 4–5 lin. long; outer green and slightly hairy outside. Stamens less than half as long as the perianth; anthers lanceolate, slightly versatile. Capsule turbinate, slightly hairy, $\frac{1}{4}$ in. long.

Nile Land. Abyssinia, *Schimper,* 1118!

4. **H. angustifolia,** *Lam. Encyc.* iii. 182. Tuber globose, $\frac{1}{3}$–$\frac{1}{2}$ in. diam.; rudimentary leaves entirely membranous. Produced leaves 6–12 to a tuber, linear, thin, $\frac{1}{2}$–1 ft. long, $\frac{1}{8}$–$\frac{1}{6}$ in. broad, hardly at all hairy. Peduncles 1–4 to a tuber, weak and slender, much shorter than the leaves, slightly hairy. Flowers 2–6 in a lax corymb; outer pedicels $\frac{1}{2}$–1 in. long; bracts subulate, $\frac{1}{2}$ in. long. Perianth yellow, $\frac{1}{4}$–$\frac{1}{3}$ in. long; outer segments green and hairy on the outside. Stamens half as long as the perianth; anthers lanceolate, sagittate at the base, longer than the filaments. Ovary turbinate, densely pilose, $\frac{1}{8}$ in. long. Capsule turbinate, $\frac{1}{4}$–$\frac{1}{3}$ in. long.—Baker in Journ. Linn. Soc. xvii. 111.

Nile Land. Somaliland: Golis Range, at Darra-as, *Miss Edith Cole!* British East Africa: Fimbini, near Rabai, *Taylor!*

Lower Guinea. Gaboon: Mfoa, 85 miles east of Gaboon, on rocks by the river, *Bates*, 520! Lower Congo: Lutete, 1500–2000 ft., *Hens*, 221. Angola: Pungo Andongo and Huilla, *Welwitsch!* 70 miles from Ambriz, *Monteiro!*

Mozamb. Dist. Zanzibar, *Hildebrandt*, 1050! *Kirk!* German East Africa: Usambara; Lutindi, *Holst*, 3265! North Liviugstone Range, *Johnson!* Portuguese East Africa: Morambala Mountain, 8000 ft., *Kirk!* British Central Africa: Nyasaland; Mount Mlanje, *Whyte!*

Also in South Africa, Madagascar, Mauritius, and Bourbon.

5. **H. canaliculata,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 265. Tuber perennial, oblong, $\frac{3}{4}$–1 in. diam., crowned with the membranous and fibrous relics of the old leaves. Leaves many, rigid, subterete, channelled down the face, 3–6 in. long, $\frac{1}{2}$ lin. diam. Peduncles 6–8 to a tuber, slender, pilose, 1–$1\frac{1}{2}$ in. long, 2-flowered. Pedicels $\frac{1}{6}$–$\frac{1}{4}$ in. long, densely pilose; bracts subulate, minute. Perianth-limb yellow, $\frac{1}{3}$ in. long; outer segments pilose outside. Stamens half as long as the perianth-limb. Ovary turbinate, $\frac{1}{6}$ in. long, densely clothed with whitish hairs. Capsule circumscissile round the middle.—Baker in Journ. Linn. Soc. xvii. 109.

Lower Guinea. Angola: Huilla; in pastures, near Lopollo, *Welwitsch!* Cunene River, *Johnston!*

6. **H. malosana,** *Baker in Kew Bulletin*, 1897, 284. Sheath-leaves densely pilose. Produced leaves erect, narrowly linear, firm, slightly hairy, 5–6 in. long, $\frac{1}{12}$ in. broad. Peduncles 4 to a tuft, very slender, much longer than the leaves, glabrous except at the tip. Flowers few, usually corymbose; pedicels very hairy; bracts linear, lowest $\frac{1}{3}$ in. long. Segments of the limb lanceolate, $\frac{1}{4}$ in. long, densely pilose outside. Stamens very short. Ovary turbinate, densely hairy. Capsule circumscissile at the middle.

Mozamb. Dist. British Central Africa: Loangwa Valley, *Nicholson!* Nyasaland; Mount Malosa, 4000–6000 ft., *Whyte!*

7. **H. cuanzensis,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 265. Tuber perennial, $1\frac{1}{2}$–2 in. long, crowned with the bristly relics of old leaves. Produced leaves 8–10, linear, slightly hairy, rigid, 1–$1\frac{1}{2}$ ft. long, $\frac{1}{6}$ in. broad. Peduncles 2–4 to a tuber, 3–4 in. long. Flowers 3–4 in a corymb; bracts linear, pilose, longer than the very short pedicels. Perianth-limb $\frac{1}{4}$ in. long; segments yellow, the outer hairy outside. Stamens half as long as the perianth. Ovary turbinate, pilose, $\frac{1}{8}$ in. long.—Baker in Journ. Linn. Soc. xvii. 111.

Lower Guinea. Angola: Pungo Andongo; in damp ground, *Welwitsch!*

No specimen in the Kew Herbarium.

8. **H. villosa,** *Linn. f. Suppl.* 198. Tuber perennial, 1–$1\frac{1}{2}$ in. diam., crowned with copious bristles. Leaves 6–20 to a tuber, lanceolate, erect or falcate, $\frac{1}{2}$–1 ft. long, $\frac{1}{2}$–1 in. broad low down, narrowed gradually to the point, more or less hairy, especially beneath. Peduncles often 3–4 to a tuber, hairy, shorter than the leaves. Flowers 4–8 in a

lax corymb; pedicels very hairy, ascending, $\frac{1}{2}$–1 in. long; bracts large, linear-subulate. Perianth-segments yellow, about $\frac{1}{2}$ in. long; outer very hairy outside. Stamens half as long as the perianth; anthers sagittate at the base, longer than the filaments. Ovary obconic, densely villous. Capsule turbinate, $\frac{1}{4}$–$\frac{1}{3}$ in. long, circumscissile round the middle. —A. Rich. Tent. Fl. Abyss. ii. 314; Baker in Journ. Linn. Soc. xvii. 113; Engl. Hochgebirgsfl. Trop. Afr. 170. *H. villosa*, Linn. f. var. foliis recurvis, Hook. f. in Journ. Linn. Soc. vii. 223. *H. petitiana*, A. Rich. Tent. Fl. Abyss. ii. 315. *H. abyssinica* and *H. simenensis*, Hochst. in. Flora, 1844, 32. *H. sobolifera*, Jacq. Ic. t. 372; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 110.

Upper Guinea. Cameroon Mountains, 7500 ft., *Mann*, 1224!

Nile Land. Abyssinia: Tigre, summit of Mount Sholoda, near Adowa, *Schimper*, 172! and without precise locality, *Schimper*, 539! British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 1874! East side of Lake Albert Edward, *Scott-Elliot*, 8074! Ruwenzori, *Scott-Elliot*, 7799! Ukamba, *Scott-Elliot*, 6467! Taita; Ndi Mountain, *Hildebrandt*, 2542!

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, at Blantyre, *Buchanan*, 26! *Scott! Scott-Elliot*, 8579! Magomero, *Meller!* Fort Young, *Nicholson!* Matabeleland, *Oates!*

Also in South Africa.

9. **H. gregoriana,** *Rendle in Journ. Linn. Soc.* xxx. 408. Tuber perennial. Leaves linear, rather flaccid, reaching $1\frac{1}{2}$ ft. long, 8 lin. broad at the middle; upper surface sparsely, lower and edges densely hairy. Peduncles 5 to a tuber, corymbose, 1 ft. long. Flowers about 4 in a corymb; bracts linear-subulate, $\frac{1}{2}$ in. long; lower pedicels 1 in. long. Perianth-segments yellow, above $\frac{1}{2}$ in. long; outer hairy outside. Stamens half as long as the perianth; anthers sagittate, twice as long as the filaments. Ovary obconic, hairy, under $\frac{1}{4}$ in. long. Capsule circumscissile at the middle.

Nile Land. British East Africa: on the Kikuyu escarpament near Kedong, *Gregory*.

No specimen in the Kew Herbarium.

10. **H. nyasica,** *Baker in Kew Bulletin*, 1897, 284. Tuber large; sheaths glabrous. Leaves firm, linear, slightly hairy, 1 ft. long, $\frac{1}{4}$ in. broad. Peduncles up to 6–7 to a tuft, hairy upwards, spreading or ascending, shorter than the leaves. Flowers few in a lax raceme; pedicels short, hairy; bracts linear, minute. Segments of the limb lanceolate, $\frac{1}{4}$–$\frac{1}{3}$ in. long, hairy outside. Stamens half as long as the limb. Ovary turbinate, hairy. Capsule circumscissile at the middle.

Mozamb. Dist. British Central Africa: Nyasaland; Mount Zomba, 4000–6000 ft., *Whyte! Whyte & McClounie!* Mount Malosa, 4000–6000 ft., *Whyte!* Zomba Rock, *Whyte!*

11. **H. angolensis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 266. Tuber perennial, oblong, 3 in. long, 1–$1\frac{1}{2}$ in. diam, crowned with copious bristly relics of old leaves. Leaves 6–8, linear, rigid, acuminate, 6–9 in. long, $\frac{1}{6}$–$\frac{1}{4}$ in. broad, ciliated on the edges and midrib beneath.

Peduncles 1–4 to a tuber, 3–6 in. long, clothed with whitish hairs. Flowers 6–8 in a lax raceme, 3–4 in. long; bracts linear, $\frac{1}{4}$–$\frac{1}{2}$ in. long. pedicels as long as the bracts. Perianth yellow, $\frac{1}{2}$ in. long; inner segments oblong; outer lanceolate, densely hairy outside. Stamens half as long as the perianth; anthers lanceolate; filaments very short, deltoid. Ovary turbinate, $\frac{1}{4}$ in. long, densely pilose.—Baker in Journ. Linn. Soc. xvii. 116.

Lower Guinea. Angola: Huilla; frequent on hills, near Lopollo, 3800–5500 ft., *Welwitsch !*

No specimen in the Kew Herbarium.

12. **H. obtusa,** *Burch. in Bot. Reg. t.* 159. Tuber large, oblong, perennial, crowned with the bristly relics of the old leaves. Leaves 12–18 to a tuber, subcoriaceous, linear, 1–1$\frac{1}{2}$ ft. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad, glabrous on the upper surfaces, ciliated on the edges and midrib beneath. Peduncles hairy, 3–6 in. long. Flowers 4–8 in a lax raceme; pedicels $\frac{1}{4}$ in. long. Bracts linear-subulate, $\frac{1}{2}$ in. long. Perianth-limb yellow, 6–8 lin. long; outer segments green and hairy on the outside. Stamens half as long as the perianth-limb. Anthers lanceolate-sagittate, longer than the filaments. Ovary turbinate, hairy, $\frac{1}{6}$–$\frac{1}{4}$ in. long.—Baker in Journ. Linn. Soc. xvii. 114.

Nile Land. British East Africa: Nandi Hills, on dry burnt ground, *Scott-Elliot,* 6983 !

Mozamb. Dist. German East Africa: Usaramo; east of the Coast Range, *Speke & Grant !* British Central Africa: Nyasaland; Shire Highlands, on Mount Sochi, *Scott-Elliot,* 8657 !

Also in South Africa.

13. **H. laikipiensis**, *Rendle in Journ. Linn. Soc.* xxx. 407. Tuber perennial. Leaves about 6 to a tuber, linear, acuminate, reaching a length of above 2 ft., scarcely $\frac{1}{2}$ in. broad; upper surface sparsely, lower and edges densely hairy. Peduncles 5 to a tuber, flattened, reaching 1$\frac{1}{2}$ ft. long. Raceme lax, 10-flowered, about 5 in. long; bracts linear-subulate, hairy, lower as long as the flowers; pedicels $\frac{1}{2}$–$\frac{3}{4}$ in. long. Perianth-segments yellow, 6–7 lin. long; outer hairy outside. Stamens half as long as the perianth; anthers more than twice as long as the filaments. Ovary turbinate, densely hairy, $\frac{1}{6}$–$\frac{1}{4}$ in. long.

Nile Land. British East Africa: Lykipia; on steppes cut up by deep ravines, West of Alngaria, *Gregory !*

Mozamb. Dist. German East Africa: Karagwe, 4000–5000 ft., *Scott-Elliot,* 8206 !

14. **H. subspicata,** *Pax in Engl. Jahrb.* xv. 143. Tuber stout, perennial, crowned with the fibrous relics of old leaves. Leaves linear, acuminate, coriaceous, 8–12 in. long, $\frac{1}{2}$ in. broad low down, glabrous on the upper surface, ciliate on the edges and midrib beneath. Peduncles many to a tuber, hairy, much shorter than the leaves. Raceme dense, subspicate, many-flowered, 3–4 in. long; pedicels scarcely any; bracts

linear, half as long as the flowers. Perianth-limb ½ in. long; segments yellow, ovate or oblong, obtuse, outer hairy on the outside. Stamens half as long as the perianth. Ovary obconic, densely hairy; stigmas free.

Lower Guinea. Angola: in the region of the River Quango, *Pogge*, 424. Malange, *Teuscz*, 249.

No specimen in the Kew Herbarium.

15. **H. Fischeri,** *Pax in Engl. Jahrb.* xv. 143. Tuber large, perennial. Leaves lanceolate, acuminate, 1–1½ ft. long, 1 in. broad low down, coriaceous, persistently clothed on both surfaces with soft whitish hairs. Peduncle densely hairy, much shorter than the leaves. Raceme dense, many-flowered, 3–4 in. long; pedicels very short; bracts linear, hairy, much shorter than the flowers. Perianth-limb above ½ in. long; segments yellow, lanceolate; outer very hairy outside. Stamens half as long as the perianth-limb. Ovary-obconic, very hairy; stigmas free.

East Tropical Africa. Without locality, *Fischer*, 611!

No specimen in the Kew Herbarium.

16. **H. polystachya,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 266. Tuber globose, perennial, 3 in. diam., crowned with the membranous relics of the old leaves. Leaves 10–14, ensiform, rigid, acuminate, 1–1½ ft. long, ⅝–¾ in. broad at the middle, glabrous on the face, slightly hairy on the back. Peduncles 6–8 to a tuber, stout, 4–6 in. long. Raceme dense, 20–30-flowered, 3–4 in. long; bracts subulate, silky, ½–¾ in. long; pedicels ½–1 in. long. Perianth yellow, ½ in. long; outer segments hairy outside. Stamens half as long as the perianth; anthers lanceolate-sagittate, longer than the filaments. Ovary turbinate, pilose, ¼ in. long. Capsule circumscissile near the top.—Baker in Journ. Linn. Soc. xvii. 115.

Lower Guinea. Angola: Huilla; between Lopollo and Catumba, on hills, *Welwitsch!*

No specimen in the Kew Herbarium.

Var. *andongensis*, Baker in Trans. Linn. Soc. ser. 2, Bot. i. 266. Leaves narrower, ½ in. broad, densely clothed on the back with white hairs. Peduncle compressed, 1½ ft. long.

Lower Guinea. Angola: Pungo Andongo, *Welwitsch!*

No specimen in the Kew Herbarium.

2. CURCULIGO, Gærtn.; Benth. et Hook. f. Gen. Pl. iii. 717.

Perianth with a tube-like beak above the ovary; segments 6, subequal, spreading. Stamens 6, inserted at the base of the perianth-segments; filaments short; anthers linear, basifixed. Ovary rostrate, 3-celled; ovules many, superposed; style short, columnar; stigmas 3, cuneate or distinct. Fruit indehiscent, sometimes baccate. Seeds small, subglobose; testa black, crustaceous; hilum beaked; embryo small, included in the fleshy or farinaceous albumen.—Rootstock a

tuber or corm. Leaves all radical, usually plicate. Flowers solitary or many, spicate, yellow.

Species 12, spread through the Tropical and Subtropical regions of the old world

1. **C. gallabatensis,** *Schweinf. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 266. Tuber oblong, perennial, 1½–2 in. long; root-fibres many, cylindrical. Outer rudimentary leaves membranous or splitting into fibres; produced leaves 3–4, linear, plicate vertically, subpetiolate, 1–2 ft. long, ⅙–½ in. broad, more or less pilose. Flowers solitary; peduncle short, hidden; tube-like beak of the ovary 1½–2 in. long; bracts linear or lanceolate; limb ⅓–¾ in. long; segments lanceolate; 3 outer hairy outside and tinged with green. Stamens half as long as the perianth-limb; anthers lanceolate, as long as the filiform filaments. Style subulate; stigmas united. Fruit oblong, sessile, crowned by the tube-like beak. Seeds black, with a white fleshy strophiole.—Journ. Linn. Soc. xvii. 123. *Gethyllis pilosa*, Schumach. & Thonn. Beskr. Guin. Pl. 172.

Upper Guinea. French Guinea: Farana, on the River Niger, 3300 ft., *Scott-Elliot*, 5374! Gold Coast: Upper Volta; Salaga, *Krause!* Togoland: Bismarckburg, *Büttner*, 381! Niger Territory: Nupe; Ilorin, *Rowland!* and without precise locality, *Barter*, 1506!

Nile Land. Galabat: bank of the River Gendua, *Schweinfurth*, 39! Jur: Jur Ghattas, *Schweinfurth*, ser. iii. 220! by the River Wau, *Schweinfurth*, 1054! Somaliland, *Mrs. Lort Phillips!*

Lower Guinea. Angola: Golungo Alto, *Welwitsch!* Lower Congo: Lutete, 2000 ft., *Hens*, 352!

Mozamb. Dist. British Central Africa: Nyasaland; in an Elephant marsh, near the River Nsessi, *Scott!*

3. CRYPTOSTEPHANUS, Welw.; Benth. et Hook. f. Gen. Pl. iii. 718.

Perianth-tube subcylindrical; segments 6, ovate or oblong, much shorter than the tube. Corona of 12 linear fleshy scales inserted at the throat of the perianth-tube. Stamens 6, inserted in one row above the middle of the perianth-tube; filaments short; anthers oblong or linear. Ovary 3-celled; ovules many in a cell, superposed; style filiform; stigma capitate. Fruit a globose berry. Seeds turgid, 1–2 in a cell. —Rootstock a tunicated bulb. Leaves sessile, lorate, obtuse. Flowers small, many in a dense umbel; spathe-valves several, lanceolate, reflexing.

Endemic.

Stamens and style exserted from the perianth-tube .	1. *C. hæmanthoides.*
Stamens and style included in the perianth-tube .	2. *C. densiflorus.*

1. **C. hæmanthoides,** *Pax in Engl. Jahrb.* xv. 142, *t.* 7, *figs.* 5–7. Rootstock and leaves unknown. Peduncle short, stout, nearly 1 in. diam. Flowers dark purple, more than 100 in a dense umbel; spathe-valves several, linear, reflexing, nearly 1 in. long; pedicels ½–1 in. long. Perianth-tube narrowly funnel-shaped, ¾ in. long; segments of

the limb oblong, acute, half as long as the tube, spreading or reflexing. Scales linear, yellow, half as long as the perianth-segments. Stamens inserted above the middle of the perianth-tube; anthers lanceolate, exserted from the perianth-tube. Style long, exserted from the perianth-tube.

Nile Land. British East Africa: Taita, *Hildebrandt*, 2578.

No specimen at Kew.

2. **C. densiflorus,** *Welw. ex Baker in Journ. Bot.* 1878, 193, *t.* 197. Rootstock a bulb, with membranous tunics. Leaves 6–8, contemporary with the flowers, lorate, obtuse, erect, glabrous, glaucous, sessile, 1 ft. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad. Peduncle stout, 2-angled, about as long as the leaves. Flowers 20–30 in a dense umbel; spathe-valves many, unequal, lanceolate, green, reflexing, under 1 in. long; pedicels very short. Perianth dark purple, $\frac{3}{4}$ in. long; tube subcylindrical, more or less curved, $\frac{1}{2}$ in. long; segments of the limb ovate, $\frac{1}{6}$ in. long. Scales linear, minute. Anthers oblong, nearly sessile, oblong, inserted above the middle of the tube. Style short, not exserted from the perianth-tube. Berry $\frac{1}{3}$ in. diam.—Baker, Handb. Amaryllid. 1; Engl. Hochgebirgsfl. Trop. Afr. 170.

Lower Guinea. Angola: mountains of Huilla, 4000–5000 ft., *Welwitsch*, 4027!

No specimen at Kew.

4. **CYRTANTHUS**, Ait.; Benth. et Hook. f. Gen. Pl. iii. 729.

Perianth funnel-shaped; tube narrow, with a naked throat; segments 6, subequal, shorter than the tube. Stamens inserted below the throat of the perianth-tube; filaments filiform, sometimes very short; anthers oblong, dorsifixed, versatile. Ovary ovoid, 3-celled; ovules many, superposed; style long, filiform; stigma distinctly or indistinctly 3-lobed. Capsule oblong, membranous, loculicidally 3-valved. Seeds flat, black, winged at the base.—Rootstock a tunicated bulb. Leaves rather fleshy, flaccid, linear or lorate. Flowers umbellate, rarely solitary, erect or pendulous, red, yellow or white; spathe-valves 2–4, lanceolate.

Species 20, the others all South African.

* MONELLA. Leaves sessile, linear. Perianth-tube cylindrical.

The only Tropical African species . . . . 1. *C. Welwitschii.*

** GASTRONEMA. Perianth-tube much dilated on the upper half.

The only species . . . . . 2. *C. sanguineus.*

1. **C. Welwitschii,** *Hiern ex Baker in Journ. Bot.* 1878, 197. Bulb ovoid, 1 in. diam.; tunics brown, membranous. Leaves about 4, contemporary with the flowers, linear, glaucous, 1–1$\frac{1}{2}$ ft. long, $\frac{1}{4}$–$\frac{1}{3}$ in.

broad. Peduncle as long as the leaves. Flowers 3–8 in an umbel, erect; spathe-valves 2, lanceolate; pedicels slender, 1–1½ in. long. Perianth red, 1¼–1½ in. long; tube narrowly funnel-shaped; segments oblong-lanceolate, rather shorter than the tube. Stamens biseriate; filaments short; anthers oblong, exserted from the tube. Style exserted from the perianth-tube; stigma 3-lobed. Capsule oblong, ¾ in. long. Seeds flat, black, oblong, ⅓ in. long.—Baker, Handb. Amaryllid. 55.

Lower Guinea. Angola: Cunene River, *Johnston!* Huilla; in damp places of the subtemperate region, 3800–5500 ft., *Welwitsch*, 4028!

Mozamb. Dist. British Central Africa: Nyasaland; Mount Mlanje, *Whyte! McClounie*, 41! Tutshila (Mtuchila R.?), *McClounie*, 12! Mount Malosa, 4000–6000 ft., *Whyte!* and without precise locality, *Buchanan*, 993!

Nearly allied to *C. angustifolius*, Ait. of South Africa.

2. **C. sanguineus,** *Hook. f. in Bot. Mag. t.* 5218. Bulb ovoid, 2 in. diam.; tunics brown, membranous. Leaves 3–4, contemporary with the flowers, distinctly petioled, lanceolate, acute, bright green, 1 ft. long, ½–¾ in. broad. Peduncle 1–3-flowered, slender, terete, pale green, 6–9 in. long; pedicels ½–2 in. long; spathe-valves 2–4, lanceolate, green, 2–3 in. long. Perianth bright red, 3–4 in. long; tube suberect or curved, subcylindrical in the lower half, dilated in the upper half; throat 1 in. diam.; segments ovate, spreading, 1–2 in. long. Stamens uniseriate, exserted a little from the throat of the perianth. Ovary oblong-trigonous; style tricuspidate, overtopping the anthers.—Baker, Handb. Amaryllid. 59; Fl. Cap. vi. 227. *Gastronema sanguineum*, Lindl. in. Journ. Hort. Soc. iii. 315, with woodcut.

Nile Land. British East Africa: Giryama, near Mombasa, in forest, *Wakefield*, 42!

Also in Natal.

5. **STENOLIRION**, Baker in Hook. Ic. t. 2493.

Perianth-tube long, straight, cylindrical; lobes of the limb equal, linear, spreading. Stamens inserted in one row at the throat of the perianth-tube; filaments long, filiform; anthers linear-oblong, versatile. Ovary ovoid, 3-celled; ovules many in a cell; style long, filiform; stigma minute, simple. Fruit baccate. Seeds many in a cell; testa thick, grey; albumen cartilaginous; embryo straight.

Endemic, monotypic.

1. **S. Elliotii,** *Baker in Hook. Icon. t.* 2493. Bulb globose, 1½ in. diam., copiously tunicated; tunics membranous, truncate at the apex. Leaves about 6, sessile, linear, spreading, contemporary with the flowers, 6–8 in. long, ⅓–½ in. broad, moderately firm, denticulate on the margin. Peduncle moderately stout, terete, shorter than the leaves. Flowers few in an umbel; pedicels short; spathe-valves ovate-lanceolate. Perianth-tube erect, 2 in. long; lobes nearly as long as the tube. Stamens nearly as long as the perianth-limb. Berry 1½ in. diam.

Mozamb. Dist. German East Africa: Urundi; on hillsides, 4000–5000 ft., *Scott-Elliot*, 8175!

6. **HIPPEASTRUM**, Herb.; Benth. et Hook. f. Gen. Pl. iii. 724.

Perianth funnel-shaped; tube usually short, rarely long, often furnished with minute scales or a distinct neck at the throat; segments ovate, subequal or the lowest of the inner row narrower. Stamens declinate, inserted at the throat of the perianth-tube; filaments filiform; anthers linear or linear-oblong, versatile. Ovary 3-celled; ovules many, superposed; style long, filiform, declinate; stigma capitate or trifid. Capsule globose, loculicidally 3-valved. Seeds flattened, with a thin black testa.—Rootstock a bulb with membranous tunics. Leaves lorate or linear. Peduncle hollow. Flowers large and showy, few in an umbel.

Species 30, all inhabiting the tropical and subtemperate regions of the New World.

1. **H. Reginæ,** *Herb. Append.* 31. Bulb globose, 2–3 in. diam. Leaves lorate, fully developed after the flowers, 2–3 ft. long, $1\frac{1}{2}$ in. broad at the middle. Peduncle $1\frac{1}{2}$ ft. long, umbel 2–4-flowered; spathe-valves lanceolate. Perianth bright red, 4–5 in. long; tube funnel-shaped, $\frac{1}{2}$ in. long; throat with a large greenish-white star; segments ovate, acute, 1–$1\frac{1}{4}$ in. broad. Style as long as the perianth-limb; stigma faintly 3-lobed.—Baker, Handb. Amaryllid. 48. *Amaryllis Reginæ*, Linn. Syst. ed. x. 977; Bot. Mag. t. 453. *Hippeastrum africanum*, Welw. ex Baker, Handb. Amaryllid. 49.

Lower Guinea. Princes Island, in aboriginal woods, 3500 ft., *Welwitsch*, 4023!

Dr. Welwitsch regarded this as indigenous, but I cannot distinguish it from one of the best known American species.

7. **HÆMANTHUS**, Linn.; Benth. et Hook. f. Gen. Pl. iii. 730.

Perianth erect, hypocrateriform; tube subcylindrical; segments equal, linear or lanceolate, usually spreading. Stamens inserted at the throat of the perianth-tube; filaments filiform, often longer than the segments; anthers small, oblong. Ovary globose, 3-celled; ovules 1–2, large, pendulous from the centre of the axile placenta; style long, filiform; stigma minutely tricuspidate. Fruit globose, baccate. Seeds often solitary; testa pale, membranous.—Rootstock a tunicated bulb. Leaves oblong or lorate, membranous in all the Tropical African species. Flowers densely umbellate, usually bright red; bracts more than 2, membranous, reflexing or ascending.

Species 40, all the others in South Africa, except one in Arabia and one in Socotra.

**NERISSA. Perianth-segments and spathe-valves spreading.
Peduncle lateral as regards the tuft of leaves.
Perianth-segments 1-nerved.

Perianth-segments $\frac{1}{2}$—$\frac{5}{8}$ in. long	1. *H. filiflorus.*
Perianth-segments 1 in. long	2. *H. zambesiacus.*

Perianth-segments 3–5-nerved.
Perianth-segments $\frac{1}{2}$ in. long.
Filaments $\frac{1}{2}$ in. long . . . . . 3. *H. micrantherus.*
Filaments $\frac{3}{4}$ in. long . . . . . 4. *H. rupestris.*
Perianth-segments $\frac{3}{4}$–1 in. long.
Stamens as long as the perianth-segments.
Pedicels short . . . . . 5. *H. Mannii.*
Pedicels half as long as the flowers . . 6. *H. eurysiphon.*
Stamens longer than the perianth-segments.
Umbel 3–6 in. diam. . . . . 7. *H. multiflorus.*
Umbel 6–8 in. diam. . . . . 8. *H. robustus.*
Peduncle central as regards the tuft of leaves.
Perianth-tube $\frac{1}{5}$ in. long.
Segments three times the length of the tube . . 9. *H. kundianus.*
Segments five times the length of the tube . . 10. *H. germarianus.*
Perianth-tube $\frac{1}{4}$–$\frac{1}{3}$ in. long.
Umbel about 3 in. diam.
Petiole 4–5 in. long . . . . . 11. *H. rotularis.*
Petiole 6–9 in. long. . . . . 12. *H. cinnabarinus.*
Umbel 4–5 in. diam. . . . . 13. *H. angolensis.*
Perianth-tube $\frac{1}{2}$ in. long . . . . . 14. *H. longipes.*
Perianth-tube $\frac{3}{4}$ in. long . . . . . 15. *H. Lindeni.*

**Gyaxis. Umbel dense. Perianth-segments and spathe-valves permanently ascending.
Stamens very short . . . . . 16. *H. brachyandrus.*
Stamens longer than the perianth-segments.
Spathe-valves 2 . . . . . 17. *H. bivalvis.*
Spathe-valves several, unequal . . . . . 18. *H. somaliensis.*

1. **H. filiflorus,** *Hiern ex Baker in Journ. Bot.* 1878, 194. Bulb globose, 1½–2 in. diam. Leafy stem about 1 ft. long, bearing about 6 leaves with broad sheathing petioles; blade oblong, 1 ft. long, 5–6 in. broad; main veins 10–12 between midrib and edge, the inner ¼ in. apart; cross-veinlets very close, oblique. Peduncle lateral, 1 ft. long, spotted. Umbel very dense, 5–6 in. diam.; pedicels 1–1¼ in. long; spathe-valves oblong, reflexing, red-brown, 2 in. long. Perianth bright red; tube cylindrical, ⅓ in. long; segments subulate, 1-nerved, ½–⅝ in. long. Filaments ¾ in. long; anthers small, oblong.—Baker, Handb. Amaryllid. 63.

Lower Guinea. Angola: Pungo Andongo, *Welwitsch*, 4009! 4010!

2. **H. zambesiacus,** *Baker*. Bulb globose, 2 in. diam. Leaves oblong, 8–9 in. long, 3 in. broad, obtuse, minutely cuspidate, narrowed gradually to the connate petioles, which form a short stem. Peduncle stout, lateral, above 1 ft. long. Umbel globose, 6 in. diam.; spathe-valves small, lanceolate, reflexing; pedicels bright red, 1½–2 in. long. Perianth-tube cylindrical, ¼ in. long; segments linear, reflexed, 1-nerved, 1 in. long. Filaments a little longer than the segments, flattened towards the base.

Mozamb. Dist. British Central Africa: Northern Zambesia; Boruma, on the River Zambesi, *Menyharth*, 691!

3. **H. micrantherus,** *Pax in Engl. Jahrb.* xv. 140. Bulb and leaves unknown. Peduncle slender, lateral. Umbel 3 in. diam.; spathe-valves lanceolate, reflexed, withered at flowering time; pedicels slender, about 1 in. long. Perianth-tube $\frac{1}{3}$–$\frac{1}{4}$ in. long; segments narrowly linear, reflexing, $\frac{1}{2}$ in. long. Filaments as long as or rather longer than the perianth-segments; anthers $\frac{1}{2}$ lin. long.

Mozamb. Dist. German East Africa: Ugalla; on the banks of the Ugalla River, *Bohm*, 28A.

No specimen in the Kew Herbarium.

4. **H. rupestris,** *Baker in Gard. Chron.* 1877, vii. 656. Bulb small, globose. Leaves 2 from the summit of a short slender special stem; petioles slender, $1\frac{1}{2}$–2 in. long; blade oblong, 6 in. long, 4 in. broad, rounded at the base; main veins 8–9 between the midrib and edge, the inner $\frac{1}{4}$–$\frac{1}{3}$ in. apart; transverse veinlets very oblique. Peduncle slender, lateral as regards the leafy stem, 3–9 in. long. Umbel dense, globose, 3 in. diam.; pedicels $\frac{1}{2}$–$\frac{3}{4}$ in. long; spathe-valves 4–5, linear-oblong, reddish, reflexing, 1–$1\frac{1}{2}$ in. long. Perianth bright red; tube $\frac{1}{4}$ in. long; segments linear, twice as long as the tube. Filaments $\frac{3}{4}$ in. long; anthers oblong, $\frac{1}{12}$ in. long.—Baker, Handb. Amaryllid. 64.

Upper Guinea. Niger Territory: Nupe, in rocky places, *Barter*, 1505!

5. **H. Mannii,** *Baker in Bot. Mag. t.* 6364. Bulb globose, $1\frac{1}{2}$–2 in. diam. Leaves 5–6 at the summit of a short special stem, contemporary with the flowers, shortly petioled, oblong, cuspidate, $\frac{1}{2}$ ft. long, 2–$2\frac{1}{2}$ in. broad; main veins about 10 on each side of the petiole; transverse veinlets close, very oblique. Peduncle slender, 8–12 in. long. Umbel 3–4 in. diam., less dense than in *H. multiflorus;* pedicels short; spathe-valves small, lanceolate, reflexing. Perianth bright red; tube $\frac{1}{3}$–$\frac{1}{2}$ in. long; segments lanceolate, 3-nerved, $\frac{3}{4}$–$\frac{1}{2}$ in. long. Filaments as long as the perianth-segments; anthers small, oblong.—Baker, Handb. Amaryllid. 63.

Upper Guinea. Sierra Leone: Bagru River, *Mann*, 897! Liberia: cultivated specimen, *Carder!*

6. **H. eurysiphon,** *Harms in Engl. Jahrb.* xix. *Beibl.* 47, 27. Bulb globose. Leaves shortly acuminate, developed after the bulb. Peduncle lateral, cylindrical, $\frac{1}{4}$ in. diam. Flowers 30–35 in an umbel, bright red; spathe-valves oblong or oblong-lanceolate, acuminate or acute; pedicels about half as long as the flowers, under 1 in. long. Perianth-tube cylindrical, about $\frac{1}{2}$ in. long, $\frac{1}{16}$–$\frac{1}{10}$ in. diam.; segments linear-lanceolate, reflexing, about $\frac{3}{4}$ in. long. Stamens not longer than the perianth-segments.

Mozamb. Dist. German East Africa: Kilimanjaro; Marangu, 7000 ft., *Volkens*, 1498.

No specimen at Kew.

7. **H. multiflorus,** *Martyn, Monogr. with figure.* Bulb globose, 2–3 in. diam. Leaves 3–4, produced on a short special stem, oblong,

acute, $\frac{1}{2}$–1 ft. long, 3–4 in. broad, shortly petiolate; main veins 6–8 on each side of the distinct midrib, the inner $\frac{1}{4}$–$\frac{1}{3}$ in. apart with close oblique cross-veinlets. Peduncle separate from the leafy stem, often spotted towards the base. Umbel dense, globose, 3–6 in. diam.; pedicels 1–$1\frac{1}{2}$ in. long; spathe-valves 6–8, lanceolate, reflexing, green, $1\frac{1}{2}$–2 in. long. Perianth blood-red; tube cylindrical, $\frac{1}{4}$–$\frac{1}{2}$ in. long; segments linear, 3-nerved, $\frac{3}{4}$–1 in. long. Filaments longer than the perianth-segments; anthers oblong, $\frac{1}{12}$–$\frac{1}{8}$ in. long. Berry bright scarlet.—Bot. Mag. tt. 961 and 1995; Andr. Bot. Rep. t. 318; Red. Lil. t. 204; Lodd. Bot. Cab. t. 912; Flore des Serres, t. 52; A. Rich. Tent. Fl. Abyss. ii. 312; Kunth. Enum. v. 587; Engl. Hochgebirgsfl. Trop. Afr. 169; Baker, Handb. Amaryllid. 63; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 80. *H. abyssinicus*, Herb. Amaryllid. 232. *H. delagoensis*, Herb. Amaryllid. 233. *H. tenuiflorus*, Herb. in Bot. Mag. t. 3870. *H. Kalbreyeri*, Baker in Gard. Chron. 1878, x. 202; Flore des Serres, t. 2377–8; Ill. Hort. 1879, t. 354.

Upper Guinea. Los Islands; in open spaces under trees, *Kalbreyer*, 230! Sierra Leone: near Falaba, *Scott-Elliot*, 5462A! near Kurusu, *Scott-Elliot*, 5540! and without precise locality, *Barter! Forster!* Lagos: Illaro, *Millen*, 113 of 1893 collection! Yoruba, *Barter*, 3423! *Millson*, 65! Niger Territory: Bornu; Musgu, *Vogel*, 100! Cameroons: Yaunde, 2600 ft., *Zenker & Staudt*, 252! Fernando Po, 5000 ft., *Mann*, 393!

Nile Land. Eritrea: Bogos; Keren, 4500 ft., *Beccari*, 126! Kordofan, *Pfund*, 297! British East Africa: White Nile, *Petherick!* Jur; Jur Ghattas, *Schweinfurth*, 1934! Bongo; North of Gir, *Schweinfurth*, 1384! Ruwenzori; in forest at 8000 ft., *Scott-Elliot*, 7814! Kilimanjaro Expedition, 40–60 miles from the coast, *Johnston!*

Mozamb. Dist. German East Africa: East shore of Lake Tanganyika, *Scott-Elliot*, 8303! and without precise locality, *Hannington!* Portuguese East Africa: Lupata, on the River Zambesi, *Kirk!* Lower Zambesi; near Expedition Island, *Kirk!* British Central Africa: Nyasaland; Manganja Hills, *Waller! Meller!* Magomero, *Meller!* and without precise locality, *Buchanan!* Matabeleland, *Oates!*

Also at Delagoa Bay.

8. **H. robustus,** *Pax in Engl. Jahrb.* xv. 140. Bulb and leaves unknown. Peduncle robust, cylindrical. Umbel dense, 6–8 in. diam.; spathe-valves reflexed, withered at the flowering time; pedicels above 2 in. diam. Perianth-tube $\frac{1}{4}$–$\frac{1}{3}$ in. long; segments linear-lanceolate, nearly 1 in. long. Stamens 1 in. long; anthers oblong, $\frac{1}{8}$ in. long.

Mozamb. Dist. German East Africa: Gonda, *Böhm*, 286.

No specimen at Kew.

9. **H. kundianus,** *J. Braun & Schumann in Mitth. Deutsch. Schutzgeb.* ii. (1889) 146. Bulb globose, 1–2 in. diam. Leaves produced direct from the bulb, long-petioled, oblong, nearly 1 ft. long, $4\frac{1}{2}$–5 in. broad, very obtuse, shortly narrowed to the base, membranous; transverse veinlets oblique. Peduncle 10 in. long. Umbel globose; pedicels under 1 in. long. Perianth-tube $\frac{1}{5}$ in. long; segments three times the length of the tube. Stamens much longer than the perianth-segments.

Upper Guinea. Cameroons, *Braun.*

No specimen at Kew.

10. **H. germarianus,** *J. Braun & Schumann in Mitth. Deutsch. Schutzgeb.* ii. (1889) 145. Bulb globose, 1 in. diam. Leaves about 7 to a tuft, produced direct from the bulb, long-petioled, oblong, 8–10 in. long, narrowed to the base, membranous when dried; transverse veinlets oblique. Peduncle long, central, unspotted. Umbel 4 in. diam.; spathe-valves lanceolate; pedicels 1–1½ in. long. Perianth-segments, spreading, 5-nerved, 1 in. long, 5 times the length of the tube. Filaments longer than the perianth-segments.

Upper Guinea. Cameroons, *Braun.*

No specimen at Kew.

11. **H. rotularis,** *Baker in Gard. Chron.* 1877, vii. 656. Bulb globose, 1 in. diam. Leaves springing directly from the bulb; petiole slender, 4–5 in. long; blade oblong, acute, 8–9 in. long, 3–3½ in. broad; main veins 10–12 between the edge and the midrib, the inner ¼ in. apart; cross veinlets horizontal. Peduncle slender, ½ ft. long. Umbel dense, 3 in. diam.; spathe-valves about 8, lanceolate, 1½–2 in. long; pedicels ½–¾ in. long. Perianth bright red; tube ⅓ in. long; segments lanceolate, 5-nerved, twice as long as the tube. Filaments as long as the perianth-segments.—Baker, Handb. Amaryllid. 65.

Upper Guinea. Niger Territory: Lagos; Yoruba, in forests, *Barter*, 3416!

12. **H. cinnabarinus**, *Decaisne in Flore des Serres, t.* 1195. Bulb globose, 1 in. diam. Leaves about 4, produced direct from the bulb, contemporary with the flowers; petiole 6–9 in. long; blade oblong, cuspidate, 6–9 in. long, 3 in. broad, narrowed to the base; main veins 9–10 between the midrib and edge; transverse veinlets oblique. Peduncle slender, ½–1 ft. long. Umbel dense, 3–4 in. diam.; spathe-valves many, lanceolate, 1½ in. long; pedicels ½–1 in. long. Perianth bright crimson; tube ¼–⅓ in. long; segments lanceolate, laxly 5-nerved, ¾ in. long. Filaments bright red, 1 in. long; anthers oblong, $\frac{1}{12}$ in. long.—Hook. in Bot. Mag. t. 5314; Floral Mag. n.s. t. 245; Baker, Handb. Amaryllid. 64.

Upper Guinea. Gold Coast, *Burton & Cameron!* Lagos, *Moloney!* Yoruba, *Millson*, 66! *Rowland!* Cameroons: Ambas Bay, *Mann*, 779! Rio del Rey, *Johnston!* Cameroon mountain at 4000 ft., *Mann*, 1341!

13. **H. angolensis,** *Welw. ex Baker in Journ. Bot.* 1878, 194. Bulb globose, 1 in. diam., with a short neck. Leaves 3–4, produced direct from the bulb; petiole 6–7 in. long, dilated at the base; blade oblong, cuspidate, ½–1 ft. long, 4 in. broad, rounded at the base; main veins 8–9 between the midrib and edge; transverse veinlets fine, close, oblique. Peduncle short, 1 ft. long, arising from the centre of the leaves. Umbel dense, 4–5 in. diam.; pedicels 1–1¼ in. long; spathe-valves deciduous. Perianth bright crimson; tube ⅓ in. long; segments linear, 3–5 nerved, ¾ in. long. Filaments about 1 in. long; anthers oblong, $\frac{1}{12}$ in. long.—Baker, Handb. Amaryllid. 65.

Lower Guinea. Angola: Golungo Alto, 1000–2400 ft., *Welwitsch*, 4008!

14. **H. longipes,** *Engl. Jahrb.* vii. 332. Bulb globose, 1 in. diam. Leaves 3, shortly petioled, oblong, cuspidate, 6–9 in. long, $2\frac{1}{2}$–3 in. broad; main veins indistinct, the inner $\frac{1}{4}$ in. apart; cross-veinlets nearly horizontal. Peduncle central, moderately stout. Umbel many-flowered, 4–5 in. diam.; spathe-valves deciduous; pedicels 1–$1\frac{1}{4}$ in. long. Perianth-tube $\frac{1}{2}$ in. long; segments linear, half as long again as the tube. Filaments as long as the perianth-segments.—Notizbl. Königl. Bot. Gart. Berl. i. 1897, 290, with tab.

Upper Guinea. Cameroons: Mungo, *Buchholz,* and without precise locality, *Preuss,* 874!

Flowered in the Berlin Botanic Garden in 1897.

15. **H. Lindeni,** *N. E. Brown in Gard. Chron.* 1890, viii. 436, *fig.* 85. Bulb globose. Leaves about 8, produced direct from the bulb; petiole slender, nearly or quite as long as the blade; blade oblong, acute, rounded at the base, 9–12 in. long, $3\frac{1}{2}$–4 in. broad; main veins 9–10 between the midrib and edge; cross veinlets very fine, oblique. Peduncle stout, central, 1–$1\frac{1}{2}$ ft. long. Umbel dense, 6–8 in. diam.; pedicels $1\frac{1}{2}$ in. long; bracts numerous, linear, $1\frac{1}{2}$–2 in. long. Perianth bright salmony scarlet, fading to pink; tube 8–10 lin. long; segments linear, 5-nerved, above 1 in. long. Filaments bright red, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long; anthers oblong, $\frac{1}{12}$ in. long.—Ill. Hort. 1890, t. 112.

Lower Guinea. Congo, cultivated specimen, *Linden!*

16. **H. brachyandrus,** *Baker.* Bulb and leaves unknown. Peduncle slender, umbel dense, globose, many-flowered, 1–$1\frac{1}{2}$ in. diam.; bracts several, ascending, membranous, lanceolate or oblong-lanceolate, 1 in. long; pedicels very short. Perianth whitish; tube $\frac{1}{8}$ in. long; segments linear, ascending, $\frac{1}{3}$ in. long. Stamens much shorter than the perianth-segments; filaments not longer than the oblong anthers.

Upper Guinea. Sierra Leone: near Kundita, growing in water, *Scott-Elliot,* 5082!

17. **H. bivalvis,** *G. Beck in Paulit. Harar,* 452, *fig.* 1. Bulb and leaves unknown. Peduncle nearly 1 ft. long, mottled with red towards the base. Umbel dense, many-flowered, 2–3 in. diam.; spathe-valves 2, broad, ovate, green, ascending, bifid, above 2 in. long; pedicels shorter than the flowers. Perianth-tube under $\frac{1}{2}$ in. long; segments linear, rather longer than the tube; papillose on the inner side below the tip. Filaments 1 in. long.

Nile Land. Somaliland: Mount Haquin, near Harar, *Paulitschke.*

No specimen at Kew.

18. **H. somaliensis,** *Baker in Kew Bulletin,* 1895, 227. Leaves 3, produced on a short special stem contemporary with the flowers, shortly petioled, oblong, acute, $\frac{1}{2}$ ft. long, cuneate at the base. Peduncle slender, lateral, 6–8 in. long. Umbel globose, 2–3 in. diam.; bracts very unequal, oblong or lanceolate, ascending, $1\frac{1}{2}$ in. long; pedicels $\frac{1}{2}$ in. long.

Perianth-tube $\frac{1}{4}$–$\frac{1}{3}$ in. long; segments linear, ascending, as long as the tube. Filaments twice as long as the perianth-segments; anthers very small. Berry globose, the size of a pea.

Nile Land. Somaliland: summit of the Golis range, 5900 ft., *Miss Edith Cole! Mrs. Lort-Phillips!*

19. **H. Nicholsoni,** *Baker.* Leaves unknown. Peduncle slender. Umbel 3 in. diam.; spathe-valves 2, small, lanceolate, spreading; pedicels 1 in. long. Perianth-tube slender, cylindrical, $\frac{1}{6}$ in. long; segments linear, 1-nerved, $\frac{1}{2}$ in. long, not spreading. Stamens as long as the perianth-segments; anthers small, oblong, yellow. Style finally $\frac{1}{6}$ in. longer than the perianth-segments.

Mozamb. Dist. British Central Africa: North Nyasaland, *Nicholson!*

Seems to be intermediate between the two sections.

8. **BUPHANE,** Herb.; Benth. et Hook. f. Gen. Pl. iii. 730.

Perianth erect, hypocrateriform; tube short, subcylindrical or campanulate; segments equal, linear or lanceolate. Stamens inserted at the throat of the perianth-tube; filaments straight, filiform; anthers oblong, versatile. Ovary turbinate, 3-celled; ovules 2 in a cell, collateral, sessile at the middle of the axile placentas; style subulate; stigma capitate, obscurely 3-lobed. Capsule turbinate, loculicidally 3-valved. Seeds solitary, globose, green.—Rootstock a very large tunicated bulb. Leaves coriaceous, ensiform or lingulate. Peduncle stout, small. Flowers small, red, densely umbellate; spathe of two large ovate valves.

Species 3, all African.

1. **B. disticha,** *Herb. in Bot. Mag. sub t.* 2578. Bulb subglobose, 6–9 in. diam., with very numerous brown membranous tunics. Leaves 8–16, distichous, ensiform, glabrous, suberect, often undulate, 1–1½ ft. long. Peduncle stout, compressed, glaucous, $\frac{1}{2}$–1 ft. long. Umbel dense, $\frac{1}{2}$–1 ft. diam.; pedicels 2–4 in. long; spathe-valves ovate, 2–3 in. long. Perianth-tube subcylindrical, $\frac{1}{4}$–$\frac{1}{2}$ in. long; segments linear, $\frac{3}{4}$–1 in. long. Stamens equalling or a little exceeding the perianth-segments. Capsule turbinate, $\frac{3}{4}$ in. long.—Baker, Handb. Amaryllid. 73. *B. toxicaria,* Herb. loc. cit. *Amaryllis disticha,* Linn. f. Suppl. 195; Paterson's Travels, 51. *Hæmanthus toxicarius,* Thunb. Prod. 59; Fl. Cap. edit. Schultes, 298.

Lower Guinea. Angola, *Welwitsch,* 4024, 4025, 4026!

Mozamb. Dist. German East Africa: Lake Tanganyika, *Cameron!* between Lake Nyasa and Lake Tanganyika, 6000–8000 ft., *Thomson!* Higher Plateau, north of Lake Nyasa, *Thomson!* British Central Africa: Nyasaland: Stevenson Road, *Scott-Elliot,* 8444! Magomero, *Meller!* Blantyre, *Buchanan!*

Also in South Africa.

9. **CRINUM,** Linn.; Benth. et Hook. f. Gen. Pl. iii. 726.

Perianth hypocrateriform or funnel-shaped; tube long, subcylindrical, straight or curved; segments linear or lanceolate, spreading, or oblong and permanently ascending. Stamens 6, inserted at the throat of the perianth-tube; filaments long, filiform; anthers linear, versatile. Ovary 3-celled; ovules few in a cell, sometimes only two; style long, filiform, more or less declinate; stigma minute, capitate. Fruit irregular in shape, finally bursting. Seeds large, bulbiform, with very thick albumen.—Rootstock a large bulb with membranous tunics. Peduncle solid. Flowers few or many in an umbel, white or tinged or keeled with red; outer spathe-valves 2, large, deltoid.

Species 80–90. Tropical and warmer regions of both hemispheres.

*STENASTER. Perianth-tube cylindrical; segments linear or lanceolate, spreading.

Segments half as long as the tube.
- Segments linear.
  - Perianth-tube $2\frac{1}{2}$–3 in. long.
    - Pedicels short . . . . . 1. *C. Bainesii.*
    - Pedicels $\frac{3}{4}$–1 in. long . . . . . 2. *C. Thruppii.*
    - Pedicels 1–2 in. long . . . . . 3. *C. tinneanum.*
  - Perianth-tube 3–4 in. long.
    - Flowers nearly sessile . . . . . 4. *C. Poggei.*
    - Pedicels $\frac{1}{2}$–1 in. long . . . . . 5. *C. Lastii.*
  - Perianth-tube 4–5 in. long.
    - Peduncle moderately stout . . . . 6. *C. longitubum.*
    - Peduncle very stout . . . . . 7. *C. Menyharthi.*
- Segments lanceolate.
  - Perianth-tube 4–5 in. long.
    - Flowers erect . . . . . 8. *C. belkianum.*
    - Flowers subcernuous . . . . . 9. *C. subcernuum.*
  - Perianth-tube 5–6 in. long.
    - Leaves suberect . . . . . 10. *C. purpurascens.*
    - Leaves floating . . . . . 11. *C. natans.*

Segments $\frac{2}{3}$–$\frac{3}{4}$ the length of the tube.
- Perianth-tube 2 in. long . . . . . 12. *C. angolense.*
- Perianth-tube 3 in. long.
  - Anthers $\frac{1}{3}$ in. long . . . . . 13. *C. leucophyllum.*
  - Anthers $\frac{1}{6}$ in. long . . . . . 14. *C. rhodanthum.*
- Perianth-tube 3–4 in. long.
  - Leaves 1 in. broad . . . . . 15. *C. ammocharoides.*
  - Leaves 2–$2\frac{1}{2}$ in. broad . . . . . 16. *C. buphanoides.*

Segments as long as the tube . . . . . 17. *C. Welwitschii.*

**CODONOCRINUM. Perianth-tube curved; limb bell-shaped.

Segments with a distinct keel of red.
- Pedicels long.
  - Pedicels 1–$1\frac{1}{2}$ in. long.
    - Leaves 1–2 in. broad . . . . . 18. *C. longifolium.*
    - Leaves 4–5 in. broad . . . . . 19. *C. massaianum.*
  - Pedicels 2 in. long . . . . . 20. *C. pedicellatum.*

Pedicels short.
Flowers 1–3 in an umbel.
Leaves $\frac{1}{4}$ in. broad . . . . . 21. *C. pauciflorum.*
Leaves $\frac{1}{2}$–$\frac{5}{8}$ in. broad . . . . . 22. *C. parvum.*
Leaves $\frac{3}{4}$–1 in. broad.
Perianth-limb 3 in. long . . . . 23. *C. majakallense.*
Perianth-limb $3\frac{1}{2}$–4 in. long . . . . 24. *C. yuccæflorum.*
Perianth-limb 4–6 in. long . . . . 25. *C. distichum.*
Flowers few in an umbel.
Leaves 1–$1\frac{1}{2}$ in. broad.
Perianth-tube 4 in. long . . . . 26. *C. tanganyikense.*
Perianth-tube 5–6 in. long . . . . 27. *C. sanderianum.*
Leaves $1\frac{1}{2}$–2 in. broad.
Leaves scabrous on the margin . . . 28. *C. scabrum.*
Leaves ciliated on the margin . . . 29. *C. fimbriatulum.*
Flowers many in an umbel.
Peduncle not very stout . . . . . 30. *C. zeylanicum.*
Peduncles very stout . . . . . 31. *C. Kirkii.*
Segments not keeled with red.
Leaves not narrowed at the base.
Flowers few in an umbel.
Perianth-tube $1\frac{1}{2}$–2 in. long . . . . 32. *C. abyssinicum.*
Perianth-tube 3–4 in. long.
Leaves under 1 in. broad . . . . 33. *C. rautenenianum.*
Leaves 2 in. broad . . . . . 34. *C. Schimperi.*
Perianth-tube 5–6 in. long . . . . 35. *C. Laurentii.*
Flowers many in an umbel . . . . . 36. *C. crassipes.*
Leaves much narrowed to the base.
Leaves 1 ft. long . . . . . 37. *C. podophyllum.*
Leaves 2–3 ft. long . . . . . 38. *C. giganteum.*

1. **C. Bainesii,** *Baker in Gard. Chron.* 1881, xvi. 39. Bulb and leaves unknown. Peduncle moderately stout, $\frac{1}{2}$ ft. long in the specimen seen. Flowers 20–30 in a dense umbel; pedicels $\frac{1}{2}$–$\frac{3}{4}$ in. long; spathe-valves ovate, membranous and reflexed when the flowers expand. Perianth red; tube slender, straight, cylindrical, $2\frac{1}{2}$–3 in. long; segments linear, half as long as the tube. Filaments nearly as long as the perianth-segments, bright red; anthers linear-oblong, $\frac{1}{4}$ in. long. Style reaching to the tip of the perianth-segments.—Baker, Handb. Amaryllid. 79.

Lower Guinea. German South-west Africa: Amboland; near Olukonda, *Schinz*, 522.

Mozamb. Dist. British Central Africa: Ngamiland; Kobis, *Baines!*

2. **C. Thruppii,** *Baker in James, Unknown Horn of Africa*, 322. Leaves short, lanceolate, closely veined, firm in texture, 2 in. broad, ciliate on the margin with minute scales. Peduncle short, stout. Flowers 20–30 in a dense umbel, all erect, red; pedicels $\frac{3}{4}$–1 in. long; spathe-valves small, deltoid. Perianth-tube very slender, $2\frac{1}{2}$–3 in. long; segments linear, 2 in. long. Stamens as long as the perianth-segments; anthers linear, $\frac{1}{4}$ in. long. Style overtopping the anthers.—Baker, Handb. Amaryllid. 79.

Nile Land. Somaliland: Hahi, *James & Thrupp!* **British East Africa:** between the River Jub and Lake Stefanie, *Donaldson Smith.*

3. **C. tinneanum,** *Kotschy & Peyr. Pl. Tinneanæ*, 44, *t.* 21. Bulb and leaves unknown. Peduncle green, compressed, moderately stout. Flowers 12–30 in an umbel; pedicels 1–2 in. long; spathe-valves lanceolate-deltoid, 2–3 in. long. Perianth rose-red; tube slender, straight, cylindrical, $2\frac{1}{2}$–3 in. long; segments linear, spreading, not more than half as long as the tube. Filaments half as long as the perianth-segments; anthers linear-oblong, $\frac{1}{4}$ in. long.

Nile Land. Kordofan, near Obeid, *Kotschy*, 392! banks of the Bahr el Ghazal, *Miss Tinne*, 7A.

Also seen in a garden at Gondokoro by *Father Knoblecher.*

No specimen at Kew.

4. **C. Poggei,** *Pax in Engl. Jahrb.* xv. 141. Bulb and leaves unknown. Peduncle robust, $\frac{1}{3}$–$\frac{1}{2}$ in. diam. Umbel dense, 30-flowered; flowers erect, nearly sessile; spathe-valves triangular, acute, $1\frac{1}{2}$ in. long, withered at the time of flowering. Perianth-tube very slender, straight, cylindrical, above 3 in. long; segments linear, spreading, half as long as the tube. Filaments shorter than the perianth-segments; anthers linear-oblong, $\frac{1}{8}$–$\frac{1}{6}$ in. long. Style overtopping the anthers.

Lower Guinea. Angola: near the River Kuango, *Pogge*, 422.

No specimen at Kew.

5. **C. Lastii,** *Baker, Handb. Amaryllid.* 79. Bulb globose, 4–5 in. diam.; neck short. Leaves linear, distichous, as long as the peduncle. Peduncle half as long again as the flowers, stout, much compressed. Flowers 20 or more in a dense umbel, all erect; pedicels $\frac{1}{2}$–1 in. long; spathe-valves triangular, membranous. Perianth-tube very slender, $3\frac{1}{2}$ in. long; segments pink, linear, $1\frac{1}{2}$ in. long. Stamens as long as the perianth-segments; anthers linear-oblong, $\frac{1}{4}$ in. long. Style overtopping the anthers.

Mozamb. Dist. German East Africa: Kaguru (Nguru ?) mountains, 2000 ft., *Last!*

6. **C. longitubum,** *Pax in Engl. Jahrb.* xv. 141. Bulb and leaves unknown. Peduncle moderately stout, $\frac{1}{3}$–$\frac{1}{2}$ in. diam. Umbel dense, 20-flowered; flowers erect; pedicels reaching $1\frac{1}{2}$ in. long; spathe-valves triangular, acute, 3–$3\frac{1}{2}$ in. long, reflexed and faded when the flowers are expanded. Perianth-tube straight, cylindrical, nearly 5 in. long; segment linear, spreading, half as long as the tube. Filaments shorter than the perianth-segments; anthers linear, $\frac{1}{3}$–$\frac{1}{2}$ in. long. Style overtopping the anthers.

Lower Guinea. Angola: Malange, *Teuscz*, 294.

No specimen at Kew.

7. **C. Menyharthi,** *Baker.* Bulb larger than a man's head. Leaves unknown. Peduncle $\frac{3}{4}$ in. diam., less than 1 ft. long. Flowers

many in an umbel; spathe-valves 4 in. long; pedicels erect, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long. Perianth-tube straight or slightly curved, 4–$4\frac{1}{2}$ in. long; segments linear, ascending, many-nerved, much tinged with red, half as long as the tube. Filaments red, as long as the perianth-segments.

Mozamb. Dist. British Central Africa: Boruma, on the River Zambesi, *Menyharth*, 690!

8. **C. belkianum,** *Schinz in Bull. Herb. Boiss.* iv. *App.* iii. 47. Leaves ensiform, about 15 in. long, $1\frac{1}{2}$ in. broad, narrowed to the tip, scabrous on the margin. Peduncle robust. Flowers many in an umbel, pedicellate. Perianth-tube straight, erect, 4–$4\frac{1}{2}$ in. long; segments spreading, lanceolate, above 2 in. long, $\frac{1}{6}$ in. broad. Filaments nearly as long as the perianth-segments.

Lower Guinea. German South-west Africa: Hereroland, *Belck*, 60D.

No specimen at Kew.

9. **C. subcernuum,** *Baker in Gard. Chron.* 1881, xvi. 180. Bulb large, globose. Leaves lorate, erect. Peduncle moderately stout, $1\frac{1}{2}$–$2\frac{1}{2}$ ft. long. Flowers 10–15 in an umbel; pedicels sometimes 1–$1\frac{1}{2}$ in. long; spathe-valves large, ovate-lanceolate, reflexing. Perianth-tube slender, cylindrical, 4–5 in. long, curved before the flower expands; segments lanceolate or linear, greenish-white, with a faint tinge of purple, half as long as the tube. Filaments bright red, under 2 in. long; anthers linear, $\frac{1}{2}$ in. long. Style overtopping the anthers.—Baker, Handb. Amaryllid. 84.

Mozamb. Dist. Portuguese East Africa: Zambesi Delta; Kongoni River, *Kirk*, 317! Lower Zambesi; Shupanga, *Kirk!*

10. **C. purpurascens,** *Herb. Amaryllid.* 250. Amphibious. Bulb ovoid, stoloniferous, 2 in. diam. Leaves many to a bulb, suberect, moderately firm, waved, bright green, strap-shaped, $1\frac{1}{2}$–3 ft. long, $1\frac{1}{2}$ in. broad at the middle. Peduncle slender, shorter than the leaves. Flowers 4–6 subsessile in an umbel; spathe-valves lanceolate, 2–3 in. long. Perianth- tube slender, tinged with purple, 5–6 in. long; segments lanceolate, spreading, half as long as the tube. Filaments purple, nearly as long as the perianth segments; anthers linear, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Style overtopping the anthers.—Baker in Bot. Mag. t. 6525 & Handb. Amaryllid. 84, ex parte.

Upper Guinea. Lagos: Ayesane, *Millen*, 174 of 1893 collection! Niger Delta: Bonny, *Kalbreyer*, 57!

Lower Guinea. Corisco Island, *Mann*, 1878!

11. **C. natans,** *Baker*. Aquatic. Bulb small, narrow-ovoid, sending out many long root fibres. Leaves as many as 20 to a bulb, submerged, strap-shaped, membranous, waved, 3 ft. long, 1–$1\frac{1}{2}$ in. broad at the middle. Inflorescence, perianth and stamens as in *C. purpurascens*, Herb., but stouter.

Upper Guinea. Sierra Leone: near Franziga, *Scott-Elliot*, 4732! near Kurusu, *Scott-Elliot*, 5542! Gold Coast, *Burton & Cameron!* Fernando Po, "in fresh-water streams," *Mann*, 1416! Niger Delta: in running water "just above the influence of the sea," *Kirk!*

12. **C. angolense,** *Benth. Gen. Plant.* iii. 730. Bulb large, ovoid. Leaves 6–8 to a bulb, lorate, much curved, distichous, thick, ciliate with minute scales, glaucous, 6–8 in. long, ½–¾ in. broad. Peduncle ⅓ in. diam., not more than 1–2 in. long. Flowers 6–8 in an umbel, dull red; pedicels very short; spathe-valves lanceolate, green, 1½–2 in. long. Perianth-tube straight, cylindrical, 2 in. long; segments spreading, linear, half as long as the tube. Filaments ½ in. long; anthers small, oblong. Style not overtopping the anthers.—Baker, Handb. Amaryllid. 80; Engl. Hochgebirgsfl. Trop. Afr. 170. *Buphane angolensis*, Baker in Journ. Bot. 1878, 197.

Lower Guinea. Angola: Huilla; in damp pastures, 3800–5500 ft., *Welwitsch*, 4012!

13. **C. leucophyllum,** *Baker in Bot. Mag. t.* 6783. Bulb ovoid, 5–6 in. diam. Leaves 12–15, distichous, lorate-oblong, whitish-green, reflexing, thick in texture, 1½–2 ft. long, 5–6 in. broad, minutely denticulate on the edges. Peduncle much compressed, 1 ft. long, 1 in. diam. Flowers 30–40 in a dense centripetal umbel; pedicels 1–2 in. long; spathe-valves deltoid, membranous, 3 in. long. Perianth-tube slender, erect, 3 in. long; segments lanceolate, pink, 2–2½ in. long. Filaments a little shorter than the perianth-segments; anthers linear, ⅓ in. long. Style overtopping the anthers.—Handb. Amaryllid. 78.

Lower Guinea. Damaraland: cultivated specimen, *Een!* Amboland: Omandongo, *Schinz*, 2056!

Originally described from a plant cultivated at Kew, brought home by Captain Thure Gustaf Een.

14. **C. rhodanthum,** *Baker.* Leaves lorate, above 1 ft. long 12–21 lin. broad, thick, densely and shortly ciliate on the margin Peduncle ½ in. diam. Umbel many-flowered; spathe-valves lanceolate membranous, 3 in. long; pedicels ¾–1 in. long. Perianth-tube 3 in. long; segments lanceolate, red, 2½ in. long, ⅙ in. broad, erecto-patent in the lower half and falcate above the middle when expanded. Stamens as long as the perianth-segments; filaments red; anthers ⅙ in. long. Style overtopping the anthers.

Mozamb. Dist. British Central Africa: Ngamiland; Kwebe, *Lugard*, 40!

15. **C. ammocharoides,** *Baker in Journ. Bot.* 1878, 195. Bulb large, globose; neck short. Leaves 6–8 to a bulb, firm, closely veined, much curved, about 1 ft. long, 1 in. broad, minutely ciliate on the margin. Peduncle stout, much compressed, 3–6 in. long. Flowers 10–20 in a dense umbel; spathe-valves lanceolate, 2–3 in. long; pedicels ½–1 in. long. Perianth-tube slender, straight, 3–4 in. long; segments linear, bright red, 2–3 in. long. Filaments bright red, as long as the perianth-segments; anthers linear-oblong, ¼ in. long. Style just overtopping the anthers.—Handb. Amaryllid. 79.

Nile Land. Kordofan: Obeuad, *Pfund*, 377! El Obeid, *Pfund*, 765 British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 1370! 1787! ser. iii. 208!

16. **C. buphanoides,** *Welw. ex Baker in Journ. Bot.* 1878, 195. Bulb 5–6 in. diam. Leaves ensiform, firm in texture, $1\frac{1}{4}$–$1\frac{1}{2}$ ft. long, 2–$2\frac{1}{2}$ in. broad at the middle, tapering gradually to the point, ciliate on the edges with minute lanceolate scales. Peduncle moderately stout, 1 ft. long. Flowers 30–40 in an umbel; spathe-valves deltoid, deciduous; pedicels 1–$1\frac{1}{2}$ in. long. Perianth-tube erect, 3–4 in. long; segments linear, 2–$2\frac{1}{2}$ in. long, $\frac{1}{4}$ in. broad, white keeled with red. Filaments nearly as long as the segments; anthers linear, $\frac{1}{3}$ in. long. Style as long as the segments.—Baker, Handb. Amaryllid. 80.

Lower Guinea. Angola: Pungo Andongo; in sandy woods, *Welwitsch*, 4014!

17. **C. Welwitschii,** *Baker in Gard. Chron.* 1881, xvi. 40. Leaves linear, moderately firm in texture, $1\frac{1}{2}$ ft. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad; edge slightly scabrous. Perianth-tube cylindrical, curved, 4 in. long; segments linear, ascending nearly as long as the tube. Stamens less than half as long as the perianth-segments.—Handb. Amaryllid. 78.

Lower Guinea. Angola, *Welwitsch*, 4016!

18. **C. longifolium,** *Thunb.* var. **farinianum**, *Baker in Gard. Chron.* 1887, i. 833. Bulb ampulliform, $2\frac{1}{2}$–3 in. diam., narrowed gradually into a neck $\frac{1}{2}$ ft. long. Leaves 10–12 to a bulb, ensiform, glaucous, narrowed gradually to a long point, 3–4 ft. long; the outer 2 in. broad low down; the inner narrower. Peduncle stout, stiffly erect, 2 ft. long. Umbel 5–6 flowered; pedicels 1–$1\frac{1}{2}$ in. long; spathe-valves ovate, 3 in. long. Perianth-tube curved, cylindrical, green, $3\frac{1}{2}$–4 in. long; segments oblong, acute, ascending, 3 in. long, $\frac{5}{8}$–$\frac{3}{4}$ in. broad, tinged with red outside, but not distinctly keeled. Stamens a little shorter than the perianth-segments; anthers linear, $\frac{1}{3}$ in. long. Style overtopping the anthers.

Mozamb. Dist. British Central Africa: Kalahari Desert, in streams, among rushes, cultivated specimen, *Farini!*

The locality is perhaps outside the Tropic. We had also a living plant at Kew in 1894, obtained from Mr. H. Rider Haggard, believed to come from an intertropical station. The species is widely spread in South Africa.

19. **C. massaianum,** *N. E. Brown in Kew Bulletin*, 1888, 100. Bulb large, with a very elongated neck, altogether $1\frac{1}{2}$ ft. long. Leaves thin, lorate, $3\frac{1}{2}$–4 ft. long, 4–5 in. broad low down, tapering gradually to a point. Peduncle moderately stout, $2\frac{1}{2}$ ft. long. Umbel many-flowered; pedicels 1–$1\frac{1}{2}$ in. long; spathe-valves ovate, membranous, 3 in. long. Perianth-tube 4–5 in. long; segments oblong, ascending, $3\frac{1}{2}$ in. long, 1 in. broad, white, with a distinct keel of bright red. Stamens bright red, nearly as long as the perianth-segment; anthers linear, $\frac{1}{2}$ in. long. Style overtopping the anthers.—*Brunsvigia? massaiana*, L. Linden & Rodig. in Ill. Hort. 1887, 55, t. 19.

Lower Guinea. Congo: cultivated specimen, *Linden!*

This plant was originally described as a native of Zanzibar, but, according to Mr. L. Linden, it came from the Congo Region.

A plant collected by Fleck in Hereroland is referred doubtfully by Dr. Schinz to the nearly-allied *C. forbesianum*, Herb. (Bot. Mag. t. 6545).

20. **C. pedicellatum,** *Pax in Engl. Jahrb.* xv. 142. Bulb and leaves unknown. Peduncle robust. Umbel 9-flowered; pedicels 2 in. long; spathe-valves triangular, acuminate, withered at the flowering time, 2½–3 in. long. Perianth-tube curved, 4 in. long; segments oblong, acute, nearly as long as the tube, nearly 1 in. broad, white tinged with rose-red. Anthers linear, ⅓ in. long. Style 7½–8 in. long.

Mozamb. Dist. German East Africa: Usmawo, by Lake Victoria Nyanza, between Magu and Kagehi, *Fischer,* 592.

No specimen at Kew.

21. **C. pauciflorum,** *Baker in Journ. Bot.* 1878, 195. Bulb globose, 2–3 in. diam.; neck very short. Leaves 6–8 to a bulb, narrowly linear, firm in texture, stiffly erect, 1–1½ ft. long, ¼ in. broad, smooth on the margin. Peduncle slender, 6–8 in. long. Flowers 1–2 to an umbel; spathe-valves lanceolate, erect, sometimes connate in the lower part, 2–3 in. long. Perianth-tube curved, 4–5 in. long; segments oblong, acute, ascending, 3 in. long, 1 in. broad, white with a distinct red keel. Filaments 1 in. shorter than the perianth-segments; anthers linear, ½ in. long. Style overtopping the anthers.—Handb. Amaryllid. 88.

Nile Land. British East Africa: Jur; Jur Ghattas, *Schweinfurth,* 1975!

22. **C. parvum,** *Baker in Kew Bulletin,* 1897, 284. Bulb small, ovoid, not narrowed into a neck. Leaves 5–7, contemporary with the flowers, linear, thin, glabrous, ½–⅝ in. broad at the middle. Peduncle slender, terete, as long as the leaves. Flower solitary, sessile; spathe-valves lanceolate, 1½ in. long. Perianth-tube erect, cylindrical, greenish, 3 in. long; segment as long as tube, ½ in. broad, white keeled with red. Stamens rather shorter than the perianth-limb.

Mozamb. Dist. Banks of the Zambesi, cultivated specimen, *Buchanan!*

Described from a plant flowered at Queenstown, Ireland, May 1896, by Mr. W. E. Gumbleton, who procured it from Mr. J. O'Brien, to whom it was sent by Mr. J. Buchanan, and is, therefore, probably a native of Nyasaland, rather than of the locality ascribed to it.

23. **C. majakallense,** *Baker.* Bulb unknown. Leaf linear, firm, ¾ in. broad, denticulate on the margin. Peduncle moderately slender. Flowers not more than 3 in an umbel; pedicels very short; spathe-valves oblong, acute, 3 in. long. Perianth-tube curved, 4 in. long; segments oblong, acute, connivent, 3 in. long, with a broad band of bright red on the back. Stamens much shorter than the perianth-segments.

Lower Guinea. Majakalla: near the River Kuango, *Mechow,* 529!

No specimen at Kew.

Near *C. yuccæflorum,* Salisb.

24. **C. yuccæflorum,** *Salisb. Parad. t.* 52. Bulb globose, medium-sized, without any distinct neck. Leaves 10–12 to a bulb, linear, firm in texture, closely veined, 1–1½ ft. long, about 1 in. broad, scabrous

on the margin. Peduncle slender, 1 ft. long. Flowers 1–2 in an umbel, sessile; spathe-valves lanceolate, green, 2–3 in. long. Perianth-tube greenish, curved, 4–5 in. long; segments oblong, acute, ascending, 3½–4 in. long; ¾–1 in. broad, white with a distinct band of red down the back. Filaments about 1 in. shorter than the perianth-segments; anthers linear-oblong, ¼ in. long. Style reaching to the top of the segments.—Baker, Handb. Amaryllid. 89. *C. Broussonetii*, Herb. in Bot. Mag. t. 2121; Lodd. Bot. Cab. t. 688; Bury, Hexand. t. 21. *Amaryllis Broussonetii*, Red. Lil. t. 62. *A. spectabilis*, Andr. Bot. Rep. t. 390. *A. ornata*, Ait. Hort. Kew. ed. 1, i. 418.

Upper Guinea. Sierra Leone, introduced into cultivation by *Lord Petre* in 1740. Niger Territory: Nupe, *Barter*, 1504! 1507!

Lower Guinea. Corisco Island, *Mann*, 1877! Angola, *Welwitsch*, 4015!

25. **C. distichum,** *Herb. Amaryllid*, 260. Bulb small, globose. Leaves about 10 to a bulb, distichous, linear, firm in texture, channelled down the face, tapering to the point, 1 ft. long, under 1 in. broad. Peduncle slender, 1 ft. long. Flowers 1–2 in an umbel, sessile; spathe-valves lanceolate, 2–3 in. long. Perianth-tube slender, curved, 4–6 in. long; segments oblanceolate, oblong, ascending, 3–4 in. long, white with a distinct red keel. Filaments 1 in. shorter than the perianth-segments; anthers linear, ½ in. long. Style overtopping the anthers.—Baker, Handb. Amaryllid. 89. *Amaryllis ornata*, Gawl. in Bot. Mag. t. 1253, excl. syn.

Upper Guinea. Sierra Leone, *Afzelius!* cultivated specimen, *Scott-Elliot!*

26. **C. tanganyikense,** *Baker.* Leaves ensiform, 1½ ft. long, 1–1¼ in. broad low down, moderately firm, not scabrous or ciliate on the margin. Peduncle slender. Flowers 2–4 in an umbel, sessile; spathe-valves ovate-cuspidate, 2 in. long. Perianth-tube erect, 4 in. long; segments of the limb oblong, as long as the tube, 1 in. broad, with a broad red keel down the back. Stamens rather shorter than the perianth-limb. Style reaching to the tip of the segments.

Mozamb. Dist. German East Africa: Uzige, north end of Lake Tanganyika, in banana groves, *Scott-Elliot*, 8302!

27. **C. sanderianum,** *Baker in Gard. Chron.* 1884, xxii. 102. Bulb globose, 2 in. diam., with a short neck. Leaves 10–12 to a bulb, linear, 1½–2 ft. long, 1–1½ in. broad, narrowed gradually to a long point, denticulate on the margin. Peduncle slender, 1 ft. long. Flowers 3–6 in an umbel, subsessile; spathe-valves lanceolate, 3–4 in. long. Perianth-tube curved, 5–6 in. long; segments oblong, acute, ascending, 3–4 in. long, ¾–1 in. broad, white distinctly keeled with red. Stamens much shorter than the perianth-segments; anthers linear, ⅓ in. long. Style overtopping the anthers.—Baker, Handb. Amaryllid. 90; Moore in Florist, 1884, 157; Garden, 1897, lii. 122, t. 1131. *C. ornatum*, Bury, Hexand. t. 18.

Upper Guinea. Sierra Leone: very common in wet places from Bafodeya to Farana, *Scott-Elliot*, 5155! Lagos, *Millen!*

Originally described from a dried specimen from Sierra Leone, sent to Kew by Mr. F. Sander of St. Albans.

28. **C. scabrum,** *Herb. in Bot. Mag. t.* 2180. Bulb globose, 5–6 in. diam.; neck short. Leaves a dozen or more to a bulb, ensiform, moderately firm, bright green, 2–3 ft. long, 1½–2 in. broad at the middle, tapering gradually to the point, scabrous on the margin. Peduncle moderately stout, 1–2 ft. long. Flowers 4–8 in an umbel; pedicels very short; spathe-valves ovate, 2–3 in. long. Perianth-tube curved, greenish, 4–5 in. long; segments oblong, acute, ascending, 2½–3 in. long, 1 in. broad, white with a distinct red keel. Filaments rather shorter than the perianth-segments; anthers linear, ⅓–½ in. long. Style reaching to the tip of the perianth-segments.—Bury, Hexand. t. 32; Baker, Handb. Amaryllid. 90; Engl. Hochgebirgsfl. Trop. Afr. 170; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 80. *C. rueppelianum*, Fresen. in Verhand. Befoerd. Gartenb. iii. 265. *C. Doriæ*, Dammann, Cat. No. 73 (1894), 7? *Amaryllis vittata*, A. Rich. Tent. Fl. Abyss. ii. 311.

Nile Land. Eritrea: Bogos; Keren, *Beccari,* 120! cultivated specimen, *Penzig!* Abyssinia: Wojerat, *Quartin-Dillon & Petit,* 52! Kordofan: El Obeid, *Pfund,* 263! Kisgil, *Pfund,* 1378! British East Africa: Jur; Jur Ghattas, *Schweinfurth,* ser. iii. 209! Bongo; Gir, *Schweinfurth,* 1523! Madi, *Speke & Grant,* 742!

29. **C. fimbriatulum,** *Baker in Journ. Bot.* 1878, 196. Leaves linear, reaching a length of 4–5 ft., 2 in. broad low down, tapering gradually to the point, glaucous green, ciliate on the edge with minute scales. Peduncle moderately stout, 2 ft. long. Flowers 3–7 in an umbel, subsessile; spathe-valves lanceolate. Perianth-tube curved, 4–5 in. long; segments oblong, acute, ascending, 3 in. long, 1 in. broad, white with a distinct bright red keel. Stamens 1 in. shorter than the perianth-segments; anthers linear, ⅓–½ in. long. Style reaching to the tip of the perianth-segments.—Handb. Amaryllid. 90.

Lower Guinea. Loanda: in marshy meadows at a low level, *Welwitsch* 4048! 4019!

30. **C. zeylanicum,** *Linn. Syst. ed.* xii. 236. Bulb globose, 5–6 in. diam.; neck short. Leaves 6–10 to a bulb, thin, ensiform, bright green, 2–3 ft. long, 3–4 in. broad, slightly scabrous on the margin. Peduncle long, not very stout, often tinged with red. Flowers 10–20 in an umbel; pedicels very short; spathe-valves ovate, 3–4 in. long. Perianth-tube curved, 3–4 in. long; segments oblong, acute, ascending, as long as the tube, 1 in. broad, white, with a broad bright red keel. Stamens 1 in. shorter than the segments; anthers linear, ½ in. long. Style overtopping the anthers.—Baker, Handb. Amaryllid. 87. *C. ornatum*, vars. *zeylanicum* and *herbertianum*, Herb. Amaryllid. 262–263. *Amaryllis zeylanica*, Linn. Sp. Plant. ed. ii. 421. *A. ornata*, Bot. Mag. t. 1171.

Lower Guinea. Angola: Ambriz, *Monteiro!*

Mozamb. Dist. Portuguese East Africa: Zambesi Delta; banks of the River Kongoni, *Kirk,* 140! 316.

Also widely spread in Tropical Asia.

Var. *reductum*, Baker in Gard. Chron. 1883, xx. 618. Bulb 2 in. diam., copiously stoloniferous. Leaves 1–1½ ft. long, 18–21 lin. broad. Peduncle under 1 ft. long. Perianth-tube curved, 5–6 in. long; segments 3–3½ in. long.

Mozamb. Dist. Zanzibar, *Kirk!*

Described from a plant that flowered at Kew in 1881. No specimen in the Kew Herbarium. Probably it should stand as a distinct species.

31. **C. Kirkii,** *Baker in Bot. Mag. t.* 6512. Bulb globose, 6–8 in. diam.; neck ½ ft. long. Leaves a dozen or more to a bulb, reflexing from near the base, thin, ensiform, bright green, 3½–4 ft. long, 4–4½ in. broad low down, tapering gradually to a long point, denticulate on the edge. Peduncles stout, compressed, 1–1½ ft. long. Flowers 12–15 in an umbel; pedicels none or very short; spathe-valves ovate, reddish-brown, 3–4 in. long. Perianth-tube curved, greenish, 4 in. long; segments oblong, acute, ascending, as long as the tube, 1–1¼ in. broad, white with a broad keel of bright red. Filaments white, 1½ in. shorter than the segments; anthers linear, ½ in. long. Style overtopping the anthers.—Handb. Amaryllid. 91.

Nile Land. British East Africa: near Mombasa, *Hildebrandt,* 1228B!

Mozamb. Dist. Zanzibar: cultivated specimen, *Kirk!* Kilimanjaro expedition, cultivated specimen, *Smith!*

Described from a plant sent from Zanzibar to Kew by Sir John Kirk in 1879.

32. **C. abyssinicum,** *Hochst. ex A. Rich. Tent. Fl. Abyss.* ii. 311. Bulb ovoid, 3 in. diam.; neck short. Leaves about 6 to a bulb, suberect, linear, 1–1½ ft. long, ½–1 in. broad, narrowed gradually to the point, closely veined, denticulate on the edges. Peduncle moderately stout, 1–2 ft. long. Flowers 4–6 in an umbel; pedicels none or very short; spathe-valves ovate-lanceolate, green, 2 in. long. Perianth-tube slender, curved, 1½–2 in. long; segments oblong, acute, 2–3 in. long, ½–¾ in. broad, white without any keel of red. Filaments under 1 in. long; anthers linear, ⅓–½ in. long.—Baker, Handb. Amaryllid. 89; Engl. Hochgebirgsfl. Trop. Afr. 170.

Nile Land. Abyssinia: Samen; between Enjedcap and Shoata, *Schimper,* 1374! and without precise locality, *Schimper,* 1198! Somaliland, *Revoil.*

33. **C. rautanenianum,** *Schinz in Bull. Herb. Boiss.* iv. *App.* iii. 48. Bulb moderately large, globose. Leaves linear, erect, moderately firm, 1–1½ ft. long, less than 1 in. broad low down, tapering gradually to a long point, denticulate on the edge. Peduncle 1 ft. or more long, moderately stout. Flowers 5 in an umbel; pedicels short; spathe-valves lanceolate, 3 in. long. Perianth-tube curved, 3–4 in. long; segments oblong, acute, ascending, pure white, as long as the tube, 1 in. broad at the middle. Filaments 2½ in. long; anthers linear.

Lower Guinea. Amboland: Olukonda, *Schinz,* 822!

34. **C. Schimperi,** *Vatke ex Schumann in Gartenfl.* 1889, 561, *t.* 1309. Bulb moderately large, globose, with an elongated neck. Leaves 6–7, ensiform, moderately firm, 3 ft. long, 2 in. broad low down,

tapering gradually to a long point, green above, rather glaucous beneath, not ciliate on the margin. Peduncle stout, terete, 2 ft. long, tinged with red. Flowers about 4 in an umbel; pedicels very short; spathe-valves ovate, membranous, 2–3 in. long. Perianth-tube curved, greenish-white, 3–4 in. long; segments oblong, acute, ascending, 1–1¼ in. broad, without any red keel. Filaments white, 1 in. shorter than the perianth-limb; anthers linear, ⅓ in. long. Style overtopping the anthers.—Baker in Bot. Mag. t. 7417.

Nile Land. Abyssinia, *Schimper*.

Described from a plant that flowered at Kew, August 1894.

35. **C. Laurentii,** *Durand & De Wilde in Rev. Hort. Belg.* xxiii. (1897) 97, *with figure*. Bulb large, globose. Leaves about 20 to a bulb, lanceolate, 12–16 in. long, 1½–3 in. broad, reflexed from the base, glaucous green, not much narrowed to the base. Peduncle stout, 1 ft. long. Flowers 2–4 to an umbel; pedicels none or very short; spathe-valves ovate. Perianth-tube greenish, 5–6 in. long, curved only at the apex; segments oblong, obtuse, 3–4 in. long, 1 in. broad, spreading widely. Stamens shorter than the perianth; anthers small.

Lower Guinea. Southern French Congo: Mayumba; on the steep banks of the Rivers Lukulla and Labusi, *Laurent*.

Flowered July 1896, at the Botanic Garden at Brussels. No specimen at Kew.

36. **C. crassipes,** *Baker in Gard. Chron.* 1887, ii. 126. Bulb very large, conical, without any neck. Leaves ensiform, dark green, moderately firm, 3–4 ft. long, 4 in. broad low down, tapering gradually to the point, not denticulate nor ciliate on the margin. Peduncle stout, compressed, under 1 ft. long. Flowers 15–20 in an umbel; pedicels reaching 1–1½ in. long; spathe-valves ovate, 3–4 in. long. Perianth-tube green, slightly curved, 2½–3 in. long; segments oblanceolate, as long as the tube, ascending, ½ in. broad, tinged with red on the back, not distinctly keeled. Filaments purple, nearly as long as the perianth-segments; anthers linear, ⅓ in. long. Style reaching to the tip of the anthers.—Handb. Amaryllid. 90.

Tropical Africa (?). Locality not known with certainty, cultivated specimen! Described from a plant flowered by Sir C. W. Strickland in July 1887, which was purchased from Messrs. E. G. Henderson & Co.

37. **C. podophyllum,** *Baker in Bot. Mag. t.* 6483. Bulb subglobose, 1½–2 in. diam., without any distinct neck. Leaves 5–6 to a bulb, oblanceolate, acute, membranous, 1 ft. long, 2–3 in. broad at the middle, subpetiolate. Peduncle compressed, slender, greenish, 1 ft. long. Flowers 2 in an umbel, sessile; spathe-valves lanceolate, 1½–2 in. long. Perianth-tube slender, curved, 5–6 in. long; segments oblong, acute, ascending, pure white, 3 in. long. Filaments nearly as long as the segments; anthers linear, ¼–⅓ in. long. Style as long as the segments.—Handb. Amaryllid. 91.

Upper Guinea. Old Calabar, *Goldie! Kalbreyer!*

38. **C. giganteum,** *Andr. Bot. Rep. t.* 169. Bulb globose, 5–6 in. diam.; neck short. Leaves 12 or more to a bulb, lanceolate, membranous, laxly veined, 2–3 ft. long, 3–4 in. broad at the middle, narrowed gradually to the point and to a narrow base. Peduncle stout, green, compressed, 2–3 ft. long. Flowers generally 4–6, rarely 8–12 in an umbel; pedicels none or very short; spathe-valves ovate, green, 3–4 in. long. Perianth-tube slender, curved, 5–7 in. long; segments oblong, pure white, 3–4 in. long, ascending, much imbricated, 1–1½ in. broad. Filaments pure white, 1 in. shorter than the perianth-segments; anthers linear, ½–¾ in. long. Style reaching to the tip of the perianth-segments.—Red. Lil. t. 181; Bury, Hexand. t. 17; Hook. in Bot. Mag. t. 5205; Baker, Handb. Amaryllid. 91. *C. vanillodorum,* Welw. ex Baker in Journ. Bot. 1878, 196; N. E. Br. in Ill. Hort. 1886, t. 617. *C. petiolatum,* var. *spectabile,* Herb. Amaryllid. 260. *Amaryllis gigantea,* Ait. Hort. Kew. edit. 2, ii. 226. *A. latifolia,* Lam. Encyc. i. 124. *A. candida,* Tratt. Tab. t. 488.

Upper Guinea. Sierra Leone, *Babington!* Ashantee: Assin-yan-Coomassie, *Cummins,* 158! and without precise locality, *Lanyon!* Lagos: Eppah (Epé), on the Kradu Lagoon, *Barter,* 3264! and without precise locality, *Moloney!* Niger Territory: Nupe, *Barter,* 1500! 1503!

Lower Guinea. Gaboon: Munda; Sibange Farm, *Soyaux,* 359! Angola: Golungo Alto, 1000–2400 ft., *Welwitsch,* 4020! 4021! Congo, cultivated specimen, *Linden!*

South Central. Monbuttu: Munza, *Schweinfurth,* 3487!

Mozamb. Dist. British Central Africa: Nyasaland; Zomba, *Buchanan!* Magomero, *Meller!*

Var. *nobile,* Baker. Peduncle and flower suffused with a tinge of red.—*C. nobile,* Bull, Cat. 1888, 21 with fig.

Country not stated.

10. **AMMOCHARIS,** Herb.; Benth. et Hook. f. Gen. Pl. iii. 727.

Perianth funnel-shaped; tube short above the ovary, cylindrical; segments 6, equal, ascending, oblong, unguiculate. Stamens 6, inserted at the throat of the perianth-tube; filaments filiform, about as long as the segments, equally divergent; anthers linear-oblong, dorsifixed, versatile. Ovary ampulliform, narrowed into a distinct neck, 3-celled; ovules many, superposed; style filiform; stigma capitate. Fruit a loculicidal, membranous capsule. Seeds globose.—Rootstock a large tunicated bulb. Leaves many, bifarious, not contemporary with the flowers. Peduncle stout. Flowers many in a dense umbel.

Species 3, all found in South Africa.

1. **A. taveliana,** *Schinz in Verh. Bot. Ver. Prov. Branden.* xxxi. 214. Bulb very large; tunics horizontally truncate at the apex. Leaves oblong, acute, 15 in. or more long, above 2 in. broad. Peduncle 8–10 in. long, nearly 1 in. diam. Umbel dense, globose, 4–5 in. diam.; pedicels 1½ in. long; spathe-valves oblong, 1 in. broad. Perianth-tube

above $\frac{1}{2}$ in. long; segments oblong-lanceolate, acute, 2 in. long. Capsule the size of a pigeon's egg; pericarp thin, membranous.

Lower Guinea. Hereroland, *Belck*, 48A.

Also Great Namaqualand.

No specimen in the Kew Herbarium.

11. **BRUNSVIGIA,** Heist.; Benth. et Hook. f. Gen. Pl. iii. 728.

Perianth funnel-shaped, straight or slightly curved; tube very short; segments lanceolate or oblong-lanceolate, subequal. Stamens long, declinate, inserted in the perianth-tube; filaments filiform, free; anthers oblong, versatile. Ovary turbinate, 3-celled; ovules few or many in a cell; style filiform, declinate; stigma capitate. Fruit turbinate, acutely angled. Seeds green, globose, with a distinct funicule.—Rootstock a large tunicated bulb. Leaves lorate or lingulate, produced after the flowers. Peduncle stout, solid. Flowers bright red, many in an umbel; spathes 2-valved.

Species 10, the others all South African.

1. **B. Kirkii,** *Baker, Handb. Amaryllid.* 99. Bulb and leaves unknown. Apex of peduncle above 1 in. diam. Flowers 30–40 in an umbel; spathe-valves lingulate, reflexed, $1\frac{1}{2}$ in. long; pedicels acutely angled, stiffly erect, $\frac{1}{2}$–1 ft. long. Perianth 1 in. long; tube short; segments lanceolate. Filaments longer than the perianth-segments; anthers small, oblong. Capsule turbinate, acutely angled, $\frac{1}{2}$–$\frac{5}{8}$ in. long. Seeds 1 in a cell, globose, green, the size of a small pea.

Mozamb. Dist. German East Africa: Usagara mountains, *Kirk!* British Central Africa: Stevenson Road, between Lakes Nyasa and Tanganyika, 4000–5000 ft., *Scott-Elliot*, 8276!

An unnamed species of *Brunsvigia* is stated by Dr. Schinz (Bull. Herb. Boiss. iv. App. iii. 47) to occur both in Amboland and Hereroland.

12. **NERINE,** Herb.; Benth. et Hook. f. Gen. Pl. iii. 728.

Perianth funnel-shaped, cut down nearly or quite to the ovary, erect or rather decurved; segments equal, oblanceolate, falcate, usually more or less crisped. Stamens inserted at the base of the perianth-segments; filaments filiform, thickened at the base, suberect or declinate, 3 shorter; anthers oblong, dorsifixed, versatile. Ovary globose, 3-lobed; ovules few in a cell, superposed; style filiform, straight or declinate; stigma obscurely tricuspidate. Capsule globose, deeply 3-lobed, membranous. Seeds 1 or few in a cell, globose.—Rootstock a tunicated bulb. Leaves usually linear, produced with or a little after the flowers. Umbels few or many-flowered; spathe-valves 2, lanceolate. Flowers pale or deep red.—*Imhofia,* Heist.

Species 15, all South African.

Peduncle long, slender, terete	1. *N. undulata.*
Peduncle short, stout, angled	2. *N. lucida.*

1. **N. undulata,** *Herb.* *App.* 19. Bulb ovoid, ¾–1 in. diam.; tunics pale, membranous. Leaves 4–6, contemporary with the flowers, linear, bright green, 1–1½ ft. long. Peduncle slender, terete, as long as the leaves. Flowers 8–12 in a centrifugal umbel; pedicels slender, 1–1½ in. long; spathe-valves as long as the pedicels. Perianth-limb pale pink, ¾–1 in. long; segments oblanceolate, much crisped. Stamens declinate, as long as the perianth. Capsule deeply lobed, ¼ in. diam.; cells 1-seeded.—Kunth, Enum. v. 621. *Amaryllis undulata,* Linn. Syst. Nat. edit. 12, 237. *Imhofia undulata,* Kuntze, Revis. Gen. 704; Schinz in Bull. Herb. Boiss. iv. App. iii. 46.

Lower Guinea. Hereroland, *Belck,* 59B (ex *Schinz*).

Widely spread in South Africa.

No specimen from Tropical Africa at Kew.

2. **N. lucida,** *Herb. Amaryllid.* 283, *t.* 36, *fig.* 3. Bulb globose, 3–4 in. diam., with brown membranous tunics produced along its neck. Leaves 6–8, contemporary with the flowers, linear, bright green, 1 ft. or more long, ½–¾ in. broad, scabrous on the edge. Peduncle stout, ancipitous, 3–8 in. long. Flowers 20–40 in a centripetal umbel; pedicels stiff, moderately stout, 3–4 in. long; spathe-valves ovate-lanceolate. Perianth-limb 1½–2 in. long, pale or bright red; segments oblanceolate, ¼ in. broad, hardly at all crisped. Stamens and style declinate, as long as the perianth. Capsule depresso-globose, ⅓–½ in. diam.—Kunth, Enum. v. 620. *Amaryllis laticoma,* Ker in Bot. Reg. t. 497. *Imhofia laticoma,* Schinz in Bull. Herb. Boiss. iv. App. iii. 46.

Lower Guinea. Hereroland and Amboland (ex *Schinz*).

Also in the Kalahari region of South Africa.

No specimen from Tropical Africa at Kew.

13. **PANCRATIUM,** Linn.; Benth. et Hook. f. Gen. Pl. iii. 733.

Perianth-tube cylindrical, funnel-shaped at the apex; segments linear or lanceolate, equal, spreading. Stamens inserted at the throat of the perianth-tube; filaments united in a conspicuous cup at the base, filiform above it; anthers linear, versatile. Ovary 3-celled; ovules many in a cell, superposed; style long, filiform; stigma capitate, obscurely 3-lobed, Capsule loculicidally 3-valved. Seeds angled by pressure; testa black.—Rootstock a tunicated bulb. Leaves sessile, linear or lorate. Peduncle solid. Flowers white, many or few in an umbel; outer spathe-valves 2, lanceolate.

Species 14, widely spread through the subtemperate and tropical regions of the Old World.

Leaves much twisted	1. *P. tortuosum.*
Leaves not twisted.	
Staminal cup 1 in. long	2. *P. trianthum.*
Staminal cup 2 in. long	3. *P. maximum.*

1. **P. tortuosum,** *Herb. in Ann. Nat. Hist. ser.* 1, iv. 28. Bulb globose, 1½–2 in. diam., with a long cylindrical neck. Leaves 6–12, linear,

contemporary with the flowers, ½–1 ft. long, conspicuously spirally twisted, moderately firm, glabrous. Peduncle very short, moderately stout. Flowers 2–4 in an umbel; pedicels very short; spathe-valve large, ovate, membranous. Perianth-tube 5–6 in. long, dilated at the apex; segments linear, ascending, above 2 in. long. Staminal cup obconic, above 1 in. long, toothed between the short free tips of the filaments; anthers linear, ¼ in. long. Style overtopping the anthers. Capsule-valves oblong, 1 in. long. — Baker, Handb. Amaryllid. 120. *P. tortifolium*, Boiss. Diagn. xiii. 18.

Nile Land. Nubia: Mount Erkowit, near Suakin, *Schweinfurth*, 273! between Suakin and Hor Tamanib, *Lord!*

Also in Arabia and Egypt.

2. **P. trianthum,** *Herb. in Ann. Nat. Hist. ser.* 1, iv. 28. Bulb globose, 1–2 in. diam., with brown tunics and a long cylindrical neck. Leaves 6–8, linear, flaccid, 1 ft. or more long, glabrous, not twisted. Peduncle short, slender. Flowers 1–3 in an umbel; spathes lanceolate, membranous, bifid at the tip. Perianth-tube slender, ½ ft. long, dilated in the upper inch; segments lanceolate, ascending, 2–3 in. long. Staminal cup 1 in. long, with bifid teeth between the short free filaments; anthers linear, yellow, ¼ in. long. Style overtopping the anthers.— Kunth, Enum. v. 663. *P. tenuifolium*, Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 312. *P. Chapmanni*, Harv. Cape Gen. edit. 2, 384.

Upper Guinea. Senegambia, *Heudelot*, 542! Sierra Leone: Falaba, *Scott-Elliot*, 5213! 5287! French Guinea: Sulimania; Dantilia, *Scott-Elliot*, 5304! Lagos: Badagry, *Millen*, 128 of 1893 collection! Abeokuta, *Barter*, 3328! Niger Territory: Nupe, *Barter*, 1501! *Baikie!*

Nile Land. Kordofan, *Kotschy*, 10! Galabat: Matamma, *Schweinfurth*, 32! Abyssinia: valley of the River Tacazze, at the foot of the mountains, *Schimper*, 1695! Efat, *Roth*, 145! Jur: Jur Ghattas, *Schweinfurth*, 1865! Jur Emet, *Schweinfurth*, 1568! Somaliland: Hahee, *James & Thrupp!* Darra-as, *Mrs. Lort-Phillips!* Golis Range, *Miss Edith Cole!*

Lower Guinea. Hereroland (ex *Schinz*). Damaraland, *Chapman!*

Mozamb. Dist. British Central Africa: Nyasaland; near the cataracts of the River Shire, *Kirk*, 11! Ngamiland; Kwebe, *Lugard*, 39! Lake Ngami, *McCabe*, 35!

3. **P. maximum,** *Forsk. Fl. Ægypt. Arab.* 72. Bulb large, globose; outer tunics dull brown. Leaves 4–5 to a bulb, contemporary with the flowers, linear, glabrous, not crisped, 1 ft. long, ½ in. broad. Peduncle short, 1-flowered; spathe tubular, membranous, 2 in. long. Perianth-tube greenish, cylindrical, 4 in. long; segments lanceolate, white, 2½ in. long. Staminal cup 2 in. long, faintly lobed at the throat; free part of filaments ⅓ in. long; anthers linear, ¼ in. long. Style protruding slightly from the staminal cup.

Nile Land. Nubia: mountains above Suakin, bulbs brought home by the Bent expedition in 1895.

Described from specimens flowered by Sir C. W. Strickland in 1897.

Also in Arabia.

14. **HYMENOCALLIS,** Salisb.; Benth. et Hook f. Gen. Pl. iii. 734.

Perianth hypocrateriform; tube cylindrical; segments equal, linear or lanceolate. Stamens united in the lower part in a distinct cup; free portion of filaments filiform; anthers linear, versatile. Ovary 3-celled; ovules 2 in each cell; style long, filiform; stigma capitate, obscurely 3-lobed. Capsule large, globose, finally dehiscent. Seeds large, globose, usually solitary, with a thick spongy testa.—Rootstock a tunicated bulb. Leaves sessile, lorate or oblong, narrowed to a petiole. Peduncle solid, compressed. Flowers usually pure white, many in an umbel.

Species 30; all the others are American, and the African plant may have been introduced from the New World.

1. **H. senegambica,** *Kunth & Bouché in Ind. Sem. Hort. Berol.* 1848, 12. Leaves sessile, ensiform, acute, arcuate, 2 ft. long, 1½–2 in. broad at the middle, narrowed to 1 in. at the base. Peduncle about as long as the leaves. Flowers 6–8 in an umbel, sessile; spathe-valves ovate. Perianth-tube slender, 5–6 in. long; segments narrowly linear, about 4 in. long. Staminal cup funnel-shaped, 1 in. long; free filaments 2–2½ in. long; anthers linear, 1 in. long.—Kunth, Enum. v. 676.

Upper Guinea. Sierra Leone: cultivated at the Berlin Botanic Garden in 1848! Lagos: cultivated specimen, *Carter!*

Lower Guinea. Angola: sandy shores between Ambriz and Quizembo, *Welwitsch,* 4029!

Messrs. Dickson, of Chester, sent to Kew in 1892 a bulb of *H. paludosa,* Salisb. (*Pancratium mexicanum,* Linn.), a native of the Southern United States, sent to them from Lagos.

15. **VELLOZIA,** Vand.; Benth. et Hook. f. Gen. Pl. iii. 739.

Perianth funnel-shaped, without any tube above the ovary; segments subequal, ovate-lanceolate. Stamens 6 in the Tropical African species (section *Xerophyta*), inserted at the base of the segments; filaments filiform, often appendiculate with a lacerated scale at the base; anthers linear, basifixed, dehiscing laterally. Ovary clavate, 3-celled; ovules many, superposed; style filiform; stigma terminal, 3-lobed or trifurcate. Capsule coriaceous, dehiscing at the apex. Seeds angled or flattened; testa black; embryo small, included in albumen.—Usually shrubs, with linear rigid leaves in a tuft at the end of the branches. Peduncles 1-flowered. Ovary and flower often viscous outside. Flowers usually white.

Species 60, mostly Tropical American. Found also in Madagascar, and 1 species in Arabia.

Caudex not produced.

Leaves 1–2 in. long . . . . . 1. *V. humilis.*
Leaves 4–5 in. long . . . . . 2. *V. Hildebrandtii.*
Leaves 6–12 in. long.

Leaves moderately firm . . . . . 3. *V. Schnitzleinia.*
Leaves very rigid . . . . . 4. *V. acuminata.*
Caudex produced.
Leaves triquetrous . . . . . 5. *V. stenophylla.*
Leaves linear, glabrous.
Perianth ¾–1 in. long . . . . . 6. *V. squarrosa.*
Perianth 1–2 in. long.
Leaves denticulate on the edge . . . . 7. *V. scabrida.*
Leaves ciliate with minute spines . . . 8. *V. hereroensis.*
Leaves not ciliate or denticulate.
Ovary viscous, not hispid . . . . 9. *V. capillaris.*
Ovary viscous and hispid . . . . 10. *V. equisetoides.*
Perianth 2–3 in. long . . . . . 11. *V. splendens.*
Leaves linear, hairy.
Perianth 1 in. long.
Leaves 3–5 in. long . . . . . 12. *V. tomentosa.*
Leaves 6–12 in. long.
Branchlets ⅓–½ in. diam. . . . . 13. *V. Spekei.*
Branchlets stouter . . . . . 14. *V. velutina.*
Perianth 1½–2 in. long . . . . . 15. *V. æquatorialis.*

1. **V. humilis,** *Baker in Journ. Bot.* 1889, 4. Acaulescent. Persistent bases of old leaves formed of thick close fibres connected by fine cross-bars. Rosettes of leaves densely cæspitose. Leaves rigidly coriaceous, linear, glabrous, prominently nerved, 1–2 in. long. Peduncles very slender, 1–2 in. long, rough with glands throughout. Perianth-segments oblong-lanceolate, ¼ in. long. Anthers linear, ⅛ in. long; filaments very short. Ovary turbinate, viscous, $\frac{1}{12}$ in. long and broad.

Mozamb. Dist. British Central Africa: Matabeleland, *Elliot!* Portuguese East Africa: Tete, on the Lower Zambesi, *Kirk!*

Also in the Transvaal and eastern districts of Cape Colony.

2. **V. Hildebrandtii,** *Baker.* Caudex very short, clothed with copious fibrous relics of old leaves. Leaves narrowly linear, glaucescent, glabrous, convolute, 4–5 in. long. Peduncle 2 in. long, densely hispid upwards. Perianth-segments linear, much smaller than in *V. Schnitzleinia.* Anthers linear, ⅓–½ in. long; filaments very short. Ovary ovoid, densely hispid.—*Barbacenia Hildebrandtii,* Pax in Engl. Hochgebirgsfl. Trop. Afr. 171.

Nile Land. Somaliland: Serut mountains near Maid, 5000–6000 ft., *Hildebrandt,* 1466.

No specimen at Kew.

3. **V. Schnitzleinia,** *Baker.* Caudex very short, densely clothed with the fibrous bases of the old leaves. Leaves 5–6 to a rosette, linear, subcoriaceous, glabrous, moderately firm, ½–1 ft. long, ⅙–¼ in. broad, obscurely serrulate on the margin. Peduncles 3–6 in. long, hispid in the upper part Perianth-segments lanceolate, ¾–1 in. long. Anthers linear, subsessile, half as long as the perianth-segments. Ovary turbinate, densely hispid. Capsule globose.—*Xerophyta Schnitzleinia,* Baker in Journ. Bot. 1875, 235. *Schnitzleinia amica,* Steud. ex

Hochst. in Flora, 1844, 31. *Hypoxis Schnitzleinia*, Hochst. in Flora, 1844, 31. *Barbacenia Schnitzleinia*, Pax in Engl. Hochgebirgsfl. Trop. Afr. 171.

Nile Land. Abyssinia: near Sabra, on rocks at the foot of mountains, *Schimper*, 1365! on rocks of slopes towards the River Tacazze, *Schimper*, 1693! and without precise locality, *Schimper*, 253!

Var. *somalensis*, Terrac. in Bull. Soc. Bot. Ital. 1892, 425. Leaves reclining, rigid. Flower solitary, pedunculate. Peduncle geniculate at the apex, strigose-pilose from the middle to the apex.

Nile Land. Somaliland: fields of Gerar-Amaden, *Candeo & Baudi di Vesme.*

No specimen at Kew.

4. **V. acuminata,** *Baker in Kew Bulletin*, 1895, 228. Acaulescent. Leaves very rigid, linear, acuminate, glabrous, 1 ft. long, $\frac{1}{4}$ in. broad low down, tapering gradually to the point. Peduncle slender, 4–5 in. long, viscous upwards. Perianth-segments lanceolate, $\frac{3}{4}$ in. long, $\frac{1}{6}$ in. broad. Anthers linear, half as long as the perianth-segments. Ovary turbinate, viscous, $\frac{1}{6}$ in. long.

Nile Land. Somaliland: Golis Range, near Woob, *Miss Edith Cole! Mrs. Lort-Phillips!*

5. **V. stenophylla,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 265. A shrub, with branches $\frac{1}{2}$–$\frac{3}{4}$ in. diam., clothed with the rigid appressed dentate base of the fallen leaves. Leaves 6–8 to a tuft, very rigid, triquetrous, channelled down the face, 6–8 in. long, $\frac{1}{12}$–$\frac{1}{8}$ in. broad, glabrous, acuminate, closely nerved, scabrous on the back. Flowers not seen.—*Xerophyta stenophylla*, Baker in Trans. Linn. Soc. ser. 2, Bot. i. 265.

Lower Guinea. Angola: Mossamedes; densely gregarious in rocky hills, near Cazemba, *Welwitsch!*

No specimen in the Kew Herbarium.

6. **V. squarrosa**, *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 264. A shrub 3–4, rarely 5 ft. high; trunk $1\frac{1}{2}$–2 in. diam. at the base; branches clothed with the squarrose bases of the old leaves. Leaves coriaceous, linear, acuminate, glabrous, 5–6 in. long, nearly $\frac{1}{2}$ in. broad, the edges denticulate upwards. Peduncle 4–5 in. long, densely viscous upwards. Perianth-segments lanceolate, blue-white, $\frac{3}{4}$–1 in. long. Ovary clavate, $\frac{1}{3}$–$\frac{3}{8}$ in. long, densely clothed with black glands. Anthers linear, subsessile, half as long as the perianth-segments. Capsule oblong, crustaceous, $\frac{1}{2}$ in. diam., densely clothed with black glands.—*Xerophyta squarrosa*, Baker in Trans. Linn. Soc. ser. 2, Bot. i. 264. *Barbacenia squarrosa*, Pax in Engl. Jahrb. xv. 144.

Lower Guinea. Angola: Pungo Andongo; gregarious on the high rocky slopes at the Fort, *Welwitsch!*

No specimen in the Kew Herbarium.

7. **V. scabrida,** *Baker.* Leaves rigid, linear, acuminate, glabrous, $\frac{1}{4}$–$\frac{1}{3}$ in. broad, denticulate on the midrib on both surfaces and the edges. Peduncles viscous upwards, 4 in. long. Perianth-segments lanceolate,

acute, above 1 in. long, $\frac{1}{4}$ in. broad. Anthers linear, sessile, $\frac{3}{4}$ in. long, Ovary turbinate, $\frac{1}{3}$–$\frac{1}{2}$ in. long, densely viscous.—*Barbacenia scabrida*, Pax in Engl. Jahrb. xv. 144.

Lower Guinea. Angola: near the Kuango River, *Pogge*, 123.

No specimen in the Kew Herbarium.

8. **V. hereroensis,** *Baker*. Leaves linear, 1 ft. long, $\frac{1}{5}$ in. broad, ciliate with minute spines on the edges and keel. Peduncle 8 in. long, viscous upwards. Perianth-segments blue, apiculate, above 1 in. long, $\frac{1}{3}$ in. broad. Stamens above $\frac{1}{2}$ in. long; filaments very short.—*Barbacenia hereroensis*, Schinz in Bull. Herb. Boiss. iv. App. iii. 49.

Lower Guinea. Hereroland: granite hills of the Tebris Pass, *Fleck*, 80.

No specimen in the Kew Herbarium.

9. **V. capillaris,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 264. A shrub, with woody branchlets, $\frac{1}{2}$ in. diam., clothed with the truncate bases of the old leaves. Leaves 4–8 in a rosette, linear, coriaceous, glabrous, aristate, 4–6 in. long, $\frac{1}{4}$ in. broad, closely ribbed. Peduncles tufted, 2–3 in. long, densely clothed with black glands. Perianth white; segments lanceolate, acuminate, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long, $\frac{1}{4}$ in. broad low down. Anthers linear, $\frac{1}{2}$ in. long; filaments very short. Ovary turbinate, $\frac{1}{4}$ in. long, densely clothed with black glands. Capsule oblong, viscous, $\frac{1}{2}$ in. diam.—*Xerophyta capillaris*, Baker in Trans. Linn. Soc. ser. 2, Bot. i. 264, t. 36, fig. 1. *Barbacenia capillaris*, Pax in Engl. Hochgebirgsfl. Trop. Afr. 171.

Lower Guinea. Angola: Huilla; Monino, in woods, and on the high plain of Empalanca, 3800–5500 ft., *Welwitsch!*

No specimen in the Kew Herbarium.

10. **V. equisetoides,** *Baker*. A shrub reaching a height of 4–5 ft.; stems 1–$1\frac{1}{2}$ in. diam.; persistent bases of old leaves densely imbricate, resembling an Equisetum, appressed, deeply and narrowly plicate. Leaves rigidly coriaceous, glabrous or slightly hairy, reaching a height of 1 ft. or more, $\frac{1}{4}$–$\frac{1}{3}$ in. broad low down. Peduncle 3–6 in. long, viscous upwards. Perianth-segments lanceolate, acute, more or less tinged with purple, 1–2 in. long. Anthers linear, half as long as the perianth-segments. Ovary clavate or turbinate, densely hispid and viscous, $\frac{1}{4}$–$\frac{1}{3}$ in. long. Capsule crustaceous, globose.—*Xerophyta equisetoides*, Baker in Journ. Bot. 1875, 233.

Mozamb. Dist. Nyasaland: Manganja Hills, *Meller!* between Blantyre and Matope, *Scott!* Shire Highlands, Mount Ndurani, *Scott-Elliot*, 8524! Zomba and the East end of Lake Shirwa, *Meller!* Zomba, *Kirk!* Matabeleland: Semokwe River ("Old and Dry" or "Elephant's grass"), *Baines!* and without precise locality, *Scott-Elliot!*

Var. *trichophylla*, Baker. Leaves densely and persistently pubescent on both sides.

Mozamb. Dist. Nyasaland: Shire Highlands, *Buchanan*, 162! Zomba, *Whyte*, 92! and without precise locality, *Buchanan*, 854!

11. **V. splendens,** *Rendle in Trans. Linn. Soc. ser.* 2, *Bot.* iv. 49, *t.* 8. A shrub 1½ ft. long, with thick branches, clothed with the truncate closely imbricate glabrous bases of the old leaves. Leaves 6–8 in a rosette, rigid, linear, glabrous, 1 ft. long, ½–⅝ in. broad low down, denticulate on the edges when young. Peduncles 5–6 to a tuft, 6–9 in. long, densely clothed upwards with raised black glands. Perianth-segments oblong-lanceolate, acute, 2–2½ in. long, ½ in. broad. Anthers linear, sessile, ¾ in. long. Ovary turbinate, ½ in. long, densely viscous. —*Barbacenia splendens*, Harms in Engl. Pfl. Ost-Afr. C. 146.

Mozamb. Dist. British Central Africa: Nyasaland; Mount Mlanje, *Whyte! McClounie!* Mount Malosa, 4000–6000 ft., *Whyte!*

12. **V. tomentosa,** *Baker*. A shrub with branchlets ¼ in. diam., clothed with the appressed deltoid tomentose bases of the fallen leaves. Leaves few in a tuft, linear, rigid, 3–5 in. long, ⅙ in. broad, pubescent on both surfaces. Peduncles 2–4 in. long, densely viscous. Perianth-segments lanceolate, 1 in. long, ⅓ in. broad, obtuse or minutely cuspidate. Anthers linear, sessile, ½ in. long. Ovary clavate, densely viscous, ⅓ in. long.—*Barbacenia tomentosa*, Pax in Engl. Jahrb. xv. 144.

East Tropical Africa. Asi, *Fischer*, 585!

13. **V. Spekei,** *Baker in Trans. Linn. Soc.* xxix. 156. A much-branched shrub 6 ft. high, with trunk 6 in. in girth, and branchlets ⅓–½ in. diam., clothed with the closely-imbricate appressed hairy deltoid bases of the fallen leaves. Leaves 6–8 in a tuft, rigid, linear, acuminate, 6–9 in. long, ¼–½ in. broad low down, slightly hairy on both surfaces, closely ribbed, spinous on the midrib beneath and slightly so on the margin. Peduncle flexuose, 2–3 in. long, viscous in the upper half. Perianth-segments lanceolate, 1 in. long. Stamens half as long as the perianth-segments. Capsule globose, crustaceous, viscous, ½ in. diam.—*Xerophyta Spekei*, Baker in Journ. Bot. 1875, 234. *Barbacenia Spekei*, Harms in Engl. Pfl. Ost-Afr. C. 146.

Mozamb. Dist. German East Africa: Uyanzi; at the Boss Rock, in the Mgunda Mkhali, near Jiwa la Mkoa, 4068 ft., *Speke & Grant*, 782!

14. **V. velutina,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 265. An erect shrub 1½–2½ ft. high, with branches ½–¾ in. diam., clothed with the rigid appressed truncate mucronate bases of the fallen leaves. Leaves 8–10 to a tuft, linear, coriaceous, finely pilose on both sides, 6–10 in. long, ¼–½ in. broad. Peduncle 1½–2 in. long, clothed upwards with black glands. Perianth-segments lanceolate, acuminate, blue, 1 in. long. Stamens half as long as the perianth; filaments very short. Ovary clavate, ¼ in. long, densely clothed with black glands. —*Xerophyta velutina*, Baker in Trans. Linn. Soc. ser. 2, Bot. i. 265. *Barbacenia velutina*, Pax in Engl. Jahrb. xv. 145.

Lower Guinea. Angola: Pungo Andongo; gregarious on rocks near the banks of the River Cuanza, 2400–3800 ft., *Welwitsch!*

15. **V. æquatorialis,** *Rendle in Journ. Linn. Soc.* xxx. 409. A dwarf shrub, with a caudex ½ ft. long, ½ in. diam., forked at the apex;

persistent bases of old leaves black, deeply and narrowly plicate. Leaves of flowering tufts linear, 5–8 in. long, $\frac{1}{4}$ in. diam., densely pubescent on both sides when young, less so when mature. Peduncle 2–3 in. long, viscous upwards. Perianth-segments lanceolate, $1\frac{1}{2}$–2 in. long, $\frac{1}{6}$–$\frac{1}{4}$ in. broad. Anthers less than half as long as the perianth-segments. Ovary oblong-cylindrical, viscous, $\frac{1}{3}$ in. long.—*Barbacenia æquatorialis*, Harms in Engl. Pfl. Ost-Afr. C. 146.

Mozamb. Dist. German East Africa: between Uyui and the coast, *Taylor !* Umba River Valley, *Smith !* Usambara; Mlalo, *Holst*, 2455 !

Order CXXXVIII. **TACCACEÆ.** (By J. G. Baker.)

Flowers regular, hermaphrodite. Perianth superior, persistent; tube campanulate; segments 6, subequal, biseriate. Stamens 6, inserted in the perianth-tube; filaments hooded, shortly 2-lobed; anthers 2-celled, adnate to the inner side of the hood and projecting between the lobes. Ovary inferior, 1-celled, with 3 parietal placentas; ovules many in a cell; style short; stigma umbrella-shaped, with 3 bifid lobes. Fruit in *Tacca* baccate. Seeds with a minute embryo and copious albumen.—Herbs with a perennial tuberous rootstock. Leaves radical, long petiolate. Flowers greenish-brown, umbellate, with a long naked peduncle, and surrounded by a whorl of foliaceous bracts.

Species about 10, spread through the Tropical zone of both hemispheres.

1. **TACCA,** Forst.; Benth. et Hook. f. Gen. Pl. iii. 741.

Characters of the Order.

1. **T. pinnatifida,** *Forst. Char. Gen.* 70, *t.* 35. Rootstock globose, reaching 1 ft. diam. Leaves large, divided into 3 forked branches; final segments ovate or lanceolate; petiole 1–3 ft. long. Flowers many in an umbel, mixed with long slender purple filaments; bracts 4–6, oblong; peduncle as long as or longer than the petiole; pedicels $\frac{1}{2}$–1 in. long. Perianth $\frac{1}{4}$–$\frac{1}{3}$ in. long; segments ovate. Berry subglobose, $\frac{3}{4}$–1 in. long.—Kunth, Enum. v. 458. *T. involucrata*, Schum. & Thonn. Beskr. Pl. Guin. 177. *T. abyssinica*, Hochst. in Schimp. Pl. Abyss. No. 1946.

Upper Guinea. Lagos, *Rowland !* Niger Territory: Nupe, *Barter*, 1541 !

Nile Land. Galabat: Matamma, *Schweinfurth*, 595 ! Abyssinia, *Schimper*, 1946 ! Jur: Jur Ghattas, *Schweinfurth*, ser. iii. 221 !

Lower Guinea. Gaboon River, *Mann*, 1040 !

South Central. Congo Free State: Monbuttu; by the River Kibali, *Schweinfurth*, 3027 !

Mozamb. Dist. Zanzibar, *Hildebrandt*, 1285 ! German East Africa: Usambara; Kibafuta, *Holst*, 2131 ! Portuguese East Africa: Morambala mountain, near the foot and at 1000 ft., *Kirk*, 20 ! Mozambique, *Forbes !* British Central Africa: Plains of Zomba, 2500–3000 ft., *Whyte !* Shire Highlands, *Buchanan*, 4 ! Mount Mlanje, *Scott-Elliot*, 8676 !

ORDER CXXXIX. **DIOSCOREACEÆ.** (By J. G. Baker.)

Flowers regular, usually diœcious. Male flowers: Perianth campanulate; tube very short; segments 6, biseriate. Stamens inserted at the base of perianth, 6 all perfect or 3 reduced to staminodia; filaments short; anthers 2-celled, dehiscing longitudinally; pistil rudimentary. Female perianth cut down to the ovary. Staminodia usually present. Ovary inferior, 3-celled; ovules 2 in a cell, superposed; styles 3, very short, stigmatose at the apex. Fruit capsular, rarely baccate. Seeds usually flattened and winged; albumen fleshy or cartilaginous; embryo minute.—Rootstock large and tuberous. Stems usually twining, sometimes prickly. Leaves simple or compound, with reticulated venation. Flowers small, greenish, usually spicate.

Species about 160, spread through the warmer zones of both hemispheres.

1. **DIOSCOREA,** Linn.; Benth. et Hook. f. Gen. Pl. iii. 742.

Flowers diœcious. Male perianth with a very short tube and 6 subequal biseriate segments. Stamens 6 all perfect or 3 reduced to staminodia, shorter than the perianth. Pistil rudimentary. Female flowers with a similar perianth, 3 short styles and an oblong triquetrous ovary. Capsule rigid, deeply 3-lobed, in the subgenus *Eudioscorea* broader than long, with orbicular seeds winged all round the nucleus, and in the subgenus *Helmia* oblong with the wing of the seed only produced on the lower side of the nucleus.—Rootstock large and tuberous. Stem twining. Leaves distinctly petiolate, opposite or alternate, simple or compound, often with bulbils in their axils. Flowers small, arranged in dense or lax spikes or racemes, solitary or fascicled, produced from leafy or leafless nodes.

Species about 150, spread through the warmer zones of both hemispheres.

Leaves simple, all alternate.
- **Leaves and flowers glabrous.**
  - **Male spikes (or racemes) simple.**
    - **Leaves cordate.**
      - **Perianth-segments linear** . . . . **1. *D. sativa.***
      - **Perianth-segments acute** . . . . **2. *D. Buchanani.***
    - **Leaves sagittate** . . . . . **3. *D. sagittata.***
  - **Male racemes with lower pedicels bearing 2–3 flowers** . . . . . **4. *D. hylophila.***
  - **Male spikes panicled** . . . . . **5. *D. macroura.***
- **Leaves beneath and flowers hairy.**
  - Spikes or racemes short.
    - **Leaves grey-pubescent beneath** . . . **6. *D. hirtiflora.***
    - **Leaves ferrugineo-tomentose beneath** . . **7. *D. rubiginosa.***
  - Spikes or racemes very long . . . . **8. *D. Preussii.***

Leaves simple, usually opposite.
- Stem quadrangular, 4-winged.
  - Flowers glabrous . . . . . **9. *D. alata.***
  - Flowers tomentose . . . . . **10. *D. colocasiæfolia.***

Stem terete.
Leaves and flowers glabrous.
Leaves cordate orbicular . . . . . 11. *D. zanzibarensis.*
Leaves ovate, shallowly cordate . . . . 12. *D. prehensilis.*
Leaves ovate, deeply cordate . . . . . 13. *D. abyssinica.*
Leaves and flowers hairy . . . . . 14. *D. schimperiana.*
Leaves compound.
Leaves trifoliolate.
Leaflets subsessile.
End leaflet obovate . . . . . 15. *D. dumetorum.*
End leaflet oblong . . . . . 16. *D. phaseoloides.*
Leaflets distinctly stalked . . . . . 17. *D. Vespertilio.*
Leaves 5- rarely 7- foliolate.
Male spikes dense.
Leaflets obovate or oblong . . . . 18. *D. beccariana.*
Leaflets lanceolate or oblanceolate . . . 19. *D. Stuhlmanni.*
Male spikes lax . . . . . 20. *D. Holstii.*

1. **D. (Helmia) sativa,** *Linn. Sp. Plant. edit.* i. 1033 (*excl. syn.*). Glabrous in all its parts. Rootstock large, tuberous, edible. Leaves distinctly petiolate, simple, ovate or orbicular, cuspidate, deeply cordate, sometimes 1 ft. long and broad, membranous, 7–9-nerved from the apex of the petiole, often bearing bulbils in their axils. Male flowers in lax slender fascicled spikes, often produced from leafless nodes; bracts minute, ovate. Perianth $\frac{1}{12}$–$\frac{1}{8}$ in. long, oblong in bud; segments linear. Fertile stamens 6. Female flowers in very lax spikes. Capsule oblong, $\frac{3}{4}$–1 in. long. Seeds broadly winged at the base only.—Hort. Cliff. t. 28; Schum. Beskr. Guin. Plant. 447; Benth. Fl. Austral. vi. 461; Hook. f. Fl. Brit. Ind. vi. 295. *D. latifolia,* Benth. in Hook. Niger Fl. 535; *D. bulbifera,* Harms in Engl. Pfl. Ost-Afr. C. 146.

Commonly cultivated throughout Tropical Africa.

Upper Guinea. Sierra Leone: Kinsuta, *Scott-Elliot,* 4235! and without precise locality, *Don!* Niger Territory: Nupe; Jeba, *Barter!* at the confluence of the Niger and Benue Rivers, *Barter!* Niger Delta: Nun River, *Vogel,* 30! Fernando Po, *Milne!* Cameroons: Yaunde, *Zenker & Staudt,* 412!

Nile Land. Galabat: Matamma, *Schweinfurth,* 593! British East Africa: Unyoro, *Speke & Grant!*

Lower Guinea. Isle of St. Thomas, *Moller,* 4! Gaboon: Munda; Sibange Farm, *Soyaux,* 77! 211! Angola: Golungo Alto, *Welwitsch,* 4037!

Mozamb. Dist. German East Africa: Usambara; Duga, *Holst,* 3160! Portuguese East Africa: Lupata, on the River Zambesi, *Kirk!* Shamo, near the mouth of the River Shire, *Kirk!* British Central Africa: Boruma, on the River Zambesi, *Menyharth!* Nyasaland; Shire Highlands, *Buchanan,* 259! and without precise locality, *Buchanan,* 11! 1185!

2. **D. Buchanani,** *Benth. in Hook. Ic. t.* 1397–8. Stems twining, glabrous, unarmed. Leaves all alternate, distinctly petiolate, cordate-ovate, cuspidate, sometimes as broad as long and palmately lobed, reaching $\frac{1}{2}$ ft. long, moderately firm, glabrous on both surfaces, 5–7-nerved from the apex of the petiole. Male flowers in dense short usually solitary axillary racemes; bracts lanceolate, shorter than the pedicels. Male perianth glabrous, very large for the genus, $\frac{1}{6}$ in. long,

with a distinct campanulate tube and 6 ovate acute segments. Fertile stamens 6. Female flowers in long lax racemes. Capsule rigid, obovate-oblong, glabrous, 1–1½ in. long. Seeds oblong, broadly winged all round the nucleus.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 173! 158! and without precise locality, *Buchanan*, 175!

3. **D. sagittifolia,** *Pax in Engl. Jahrb.* xv. 147. Stem twining, glabrous. Leaves alternate; petiole reflexed, shorter than the blade; blade triangular-sagittate, acuminate, 4–5 in. long, 2½–3 in. broad, marked with dense pellucid lines, 5-nerved; basal lobes obtuse. Male spikes geminate, much shorter than the leaves; bracts broad, ovate, very small. Perianth campanulate; segments broad, ovate, obtuse. Fertile stamens 6, very short. Female flowers and fruit unknown.

Tropical Africa. Without locality, *Lecard*, 14.

Nile Land. British East Africa: Jur; near Okel (Okale), *Schweinfurth*, 1712!

No specimen at Kew.

4. **D. hylophila,** *Harms in Engl. Pfl. Ost-Afr. C.* 146. Stems twining, unarmed, glabrous. Leaves alternate, distinctly petiolate, cordate-orbicular, cuspidate, membranous, glabrous on both surfaces, 6–8 in. long and broad, 9-nerved from the apex of the petiole. Male flowers in long very lax peduncled racemes solitary in the axils of the leaves; pedicels simple or forked, 2–3-flowered, deflexed; bracts lanceolate. Perianth campanulate, glabrous, $\frac{1}{12}$ in. long; segments orbicular. Fertile stamens 3. Female flowers and fruit unknown.

Mozamb. Dist. German East Africa: Usambara; Lutindi, *Holst*, 3423!

5. **D. macroura,** *Harms in Notizb. Köngl. bot. Gart. Berl.* i. (1897), 266. Leaves alternate, distinctly petiolate, cordate-orbicular, 1 ft. long and broad, membranous, glabrous, with an undulated margin and a subulate apical cusp 1½–2 in. long. Male flowers in an ample panicle; racemes lax, reaching 2 ft. in length; lower flowers 2–3-nate; pedicels very short; bracts ovate, minute. Perianth greenish, ⅛ in. long; segments oblong. Fertile stamens 6, very short. Female flowers and fruit not seen.

Upper Guinea. Cameroons: Yaunde, *Zenker & Staudt*, 414!

6. **D. hirtiflora,** *Benth. in Hook. Niger Fl.* 537. Stems slender, twining, unarmed, pubescent upwards. Leaves all alternate, distinctly petiolate, simple, cordate-ovate, cuspidate, moderately firm, 1½–2 in. long and broad, 5–7-nerved from the apex of the petiole, glabrous above, grey-pubescent beneath. Male flowers in slender lax axillary spikes 2–3 in. long; rhachis very hairy; bracts ovate. Perianth very small, hairy; segments obtuse; outer ovate, inner oblong. Fertile stamens 3. Female flowers and fruit unknown.

Upper Guinea. Lagos: in forest-roads on the way to Papalaito, *Millen*, 29 of 1896 collection! Niger Territory: Nupe, *Barter*, 561! banks of the River Quorra (Niger) opposite Stirling, *Vogel*, 199!

Lower Guinea. Angola: Golungo Alto, *Welwitsch*, 4039!

7. **D. rubiginosa,** *Benth. in Hook. Niger Fl.* 538. Stem unarmed, twining, ferrugineo-tomentose. Leaves alternate, distinctly petiolate, simple, cordate-ovate, cuspidate, 3–4 in. long, 7–9-nerved from the apex of the petiole, glabrous above, ferrugineo-tomentose beneath. Male flowers unknown. Female flowers in lax fascicled spikes 3–4 in. long; bracts oblong, minute. Perianth tomentose; outer segments ovate, inner oblong. Ovary obtusely trigonous, oblong, imperfectly 3-celled.

Upper Guinea. Sierra Leone, *Don !*

No specimen at Kew.

8. **D. Preussii,** *Pax in Engl. Jahrb.* xv. 147. Stems slender, climbing, unarmed, pubescent when young. Leaves all alternate, distinctly petiolate, simple, cordate-ovate, cuspidate, thin, 7–9-nerved, 3–4 in. long and broad, glabrous above, pubescent beneath. Male racemes fascicled in the axils of the leaves, very lax, reaching 6–8 in. long; rhachis pubescent; bracts lanceolate, pubescent. Perianth hairy, $\frac{1}{12}$ in. long; segments obtuse, ovate or oblong. Fertile stamens 3. Female flowers and fruit unknown.

Upper Guinea. Lagos; Abeokuta, *Irving*, 103! Cameroons: Yaunde, *Zenker*, 325! *Zenker & Staudt*, 413! and without precise locality, *Preuss*, 504!

9. **D. alata,** *Linn. Sp. Plant. edit.* 1, 1033. Root large, edible. Stems twining, glabrous, quadrangular, 4-winged. Leaves distinctly petiolate, simple, usually opposite, ovate-acuminate, deeply cordate at the base, glabrous, 7-nerved from the apex of the petiole, membranous, reaching 6–9 in. long. Male flowers in long slender fascicled spikes. Perianth $\frac{1}{12}$ in. long; segments lanceolate, glabrous. Fertile stamens 6. Female flowers in lax spikes. Capsule glabrous, with 3 large wings, 1–1$\frac{1}{4}$ in. diam.; axis $\frac{3}{4}$ in. long. Seeds orbicular, winged all round the nucleus.—Schum. Beskr. Guin. Plant. 447; Kunth, Enum. v. 387; Hook. f. Fl. Brit. Ind. vi. 296.

Upper Guinea. Niger Territory: Nupe, *Barter*, 1534! by the River Niger (Quorra), *Vogel !*

Nile Land. British East Africa: Niamniam; at the River Nabambisso, *Schweinfurth*, 3712!

Lower Guinea. Island of St. Thomas, *Moller*, 103! *Quintas*, B! Angola, *Welwitsch*, 4030! 4036! 4044!

Cultivated throughout Tropical Africa.

10. **D. colocasiæfolia,** *Pax in Engl. Jahrb.* xv. 145. Stems climbing; branches 4-winged. Leaves opposite, distinctly petiolate, simple, ovate, acuminate, deeply sagittate at the base, 1 ft. long, 7–8 in. broad, 7-nerved from the apex of the petiole, glabrous on both surfaces. Male flowers unknown. Female flowers in branched tomentose spikes; bracts linear, tomentose. Perianth-segments ovate, obtuse, tomentose. Ovary tomentose; style very short.

Upper Guinea. Cameroons: Victoria, cultivated under the name of "Water Yam," *Buchholz*. Called also "Yorna," *J. Braun*.

No specimen at Kew.

11. **D. sansibarensis,** *Pax in Engl. Jahrb.* xv. 146. Whole plant glabrous. Stems slender, climbing, terete. Leaves opposite, simple, distinctly petiolate, cordate-orbicular, conspicuously cuspidate, 2–2½ in. long, about 2 in. broad, 7-nerved, bearing large verrucose bulbillæ in their axils. Male spikes 2–4-nate, 6–8 in. long; flowers remote; bracts and bracteoles ovate. Perianth-segments oblong, obtuse. Fertile stamens 6. Female flowers and fruit unknown.—Harms in Engl. Pfl. Ost-Afr. C. 146.

Mozamb. Dist. German East Africa: Bagamoyo, *Hildebrandt*, 1742!

No specimen at Kew.

12. **D. prehensilis,** *Benth. in Hook. Niger Fl.* 536. Glabrous in all its parts. Stem slender, woody, twining, sometimes prickly. Leaves usually opposite, distinctly petiolate, simple, ovate, cuspidate, shallowly cordate, 2–4 in. long, moderately firm, 5-nerved from the apex of the petiole. Male flowers in densely fascicled lax spikes 2–3 in. long; bracts ovate, very small. Perianth $\frac{1}{16}$ in. long; segments oblong, obtuse. Fertile stamens 6. Female flowers in lax spikes. Capsule glabrous, 1–1¾ in. diam., ½–¾ in. long, with three acute lobes. Seeds orbicular, winged all round.—*D. odoratissima*, Pax in Engl. Jahrb. xv. 146.

Upper Guinea. Sierra Leone, *Vogel*, 21! Liberia, *Carder!* Togoland: Bismarckburg, *Büttner*, 104! Niger Territory: Nupe, *Barter*, 1057! 1536! by the River Niger at Jeba, *Barter!* and at Attah, *Vogel*, 86! Cameroons: Yaunde, *Zenker*, 329!

Lower Guinea. Island of St. Thomas, *Quintas*, 105! *Newton!* Gaboon: River Muni, *Mann*, 1751! Congo: Bangala, 1000–1500 ft., *Hens*, 174! and without precise locality, *Smith!* Angola: Golungo Alto, *Welwitsch*, 4035! 4036!

South Central. Lunda: Bashilange; Mukenge, *Pogge*, 1043.

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan*, 531!

Var. *minutiflora*, Baker. Leaves more coriaceous, more orbicular and rarely cordate at the base, usually broadly rounded.—*D. minutiflora*, Engl. Jahrb. vii. 332. *D. multiflora* (by error), Pax in Engl. Jahrb. xv. 146, t. 8.

Upper Guinea. Sierra Leone: near Regent, *Scott-Elliot*, 4026! in bush about Sierra Leone, *Scott-Elliot*, 4157! and near Lester Peak, *Scott-Elliot*, 4171! Ashanti: Assin-Yan-Coomassie, *Cummins!* Lagos: Ido Island, *Millen*, 48 of 1893 collection! and without precise locality, *Moloney!* Old Calabar River, *Mann*, 2283! Cameroons: Mungo, *Buchholz*, between Barombi and Kumba, *Preuss*, 54!

Lower Guinea. Gaboon: Gaboon River, *Mann*, 975!

Very near *D. abyssinica*, Hochst. and perhaps not specifically distinct.

13. **D. abyssinica,** *Hochst. ex Kunth, Enum.* v. 387. Whole plant glabrous. Stems slender, twining, unarmed. Leaves often opposite, distinctly petiolate, ovate, acuminate, deeply cordate at the base, distinctly 7-nerved from the apex of the petiole, membranous, 3–4 in. long. Male flowers in short lax densely fascicled spikes 1–2 in. long; bracts ovate, very small. Perianth $\frac{1}{16}$ in. long; segments ovate, obtuse. Fertile stamens 6. Female flowers in long lax spikes. Capsule orbicular, deeply lobed, 1–1¼ in. diam. Seeds orbicular, winged all round.—A. Rich. Tent. Fl. Abyss. ii. 318; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 84.

Nile Land. Galabat: Matamma, *Schweinfurth*, 587! 588! Eritrea: Keren *Steudner*, 512! Ginda, at the foot of Donkollo Mountain, 3000 ft., *Schweinfurth*, 212, 313. Abyssinia: Tigre; valleys near Jelajeranne, *Schimper*, 1720! and without precise locality, *Roth!* British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 2032!

14. **D. schimperiana,** *Hochst. ex Kunth, Enum.* v. 339. Stems slender, twining, unarmed, pubescent. Leaves often opposite, distinctly petiolate, simple, ovate, acuminate, deeply cordate at the base, membranous, 5-nerved from the apex of the petiole, slightly pubescent or glabrous on both surfaces, 4–6 in. long and broad. Male flowers in long lax fascicled spikes with a pubescent rhachis; bracts minute, ovate. Male perianth slightly hairy, $\frac{1}{16}$ in. long; segments obtuse, ovate or oblong. Fertile stamens 6, included. Female spikes long, very lax. Ovary densely pubescent. Capsule glabrescent, $1\frac{1}{2}$ in. diam., with 3 acute orbicular lobes and an axis 1 in. long. Seeds orbicular, winged all round.—A. Rich. Tent. Fl. Abyss. ii. 317; Engl. Hochgebirgsfl. Trop. Afr. 171.

Nile Land. Abyssinia: Tigre; near Jelajeranne, *Schimper*, 1642!

Lower Guinea. Angola: Golungo Alto, *Welwitsch*, 4038!

Var. *vestita*, Pax in Engl. Jahrb. xv. 148. Leaves beneath and flowers densely pubescent.

Upper Guinea. Lagos: Otto, *Millen*, 17 of 1895 collection!

Nile Land. Abyssinia: Begemeder; Senka Berr, on the River Rebb, *Schimper!* British East Africa: Niamniam; at Gumango Hill, *Schweinfurth*, 3420!

Lower Guinea. Lower Congo, *Laurent!*

Mozamb. Dist. British Central Africa: Nyasaland; by the Mwata Manga stream, 4000 ft., *Kirk!* Shire Highlands, *Buchanan*, 112! 266! and without precise locality, *Buchanan*, 778! 1506!

15. **D. (Helmia) dumetorum,** *Pax in Engl. & Prantl. Pflanzenfam.* ii. *Abt.* 5, 134. Stems robust, woody, terete, wide-climbing, sometimes prickly. Leaves trifoliolate, moderately firm, glabrescent on the upper surface, densely and persistently pubescent beneath; leaflets obscurely stalked, the end one obovate, cuspidate, reaching 5–6 in. long, distinctly triplinerved to the apex; side-leaflets very oblique. Male flowers in short axillary panicles with dense cylindrical branches; bracts ovate, minute, densely pubescent. Perianth campanulate, very small, densely pubescent; tube very short; segments orbicular. Perfect stamens 6, included. Female flowers in lax simple racemes. Capsule oblong, glabrescent, acutely triquetrous, $1\frac{1}{2}$–2 in. long. Seeds oblong, 1 in. long, with a large oblong basal wing.—Harms in Engl. Pfl. Ost-Afr. C. 147. *D. dæmona*, Benth. in Hook. Niger Fl. 538, not of Roxb. *D. triphylla*, A. Rich. Tent. Fl. Abyss. ii. 316, t. 96 B, not of Linn. *D. quartiniana*, A. Rich. Tent. Fl. Abyss. ii. 316, t. 96 A.; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 85. *D. buchholziana*, Engl. Jahrb. vii. 333. *Helmia dumetorum*, Kunth, Enum. v. 436.

Upper Guinea. Lagos: Abeokuta, *Irving*, 108! Gold Coast: Aquapim Mountains, *Vogel!* Niger Territory: Nupe, *Barter*, 1537! Cameroons: Mungo, *Buchholz.*

Nile Land. Eritrea: Ginda, at the foot of Mount Donkolla, 3000 ft., *Schwein-*

furth, 365! Galabat: Matamma, *Schweinfurth*, 589! 591! Abyssinia, *Schimper! Quartin-Dillon.* British East Africa: Niamniam; Tuhamis Seriba, *Schweinfurth*, 3779!

Lower Guinea. Island of St. Thomas: Correa, 150 ft., *Quintas*, 104! Angola: Golungo Alto, *Welwitsch*, 4052!

Mozamb. Dist. Portuguese East Africa: Morambala Mountain, *Kirk!* Lupata, on the River Zambesi, *Kirk!* British East Africa: Nyasaland; Manganja Hills, *Meller!* Namasi River, *Cameron!* Shire Highlands, *Buchanan*, 184! Upper Shire Valley, *Kirk!* Shibisa (Chikwawa) to Tshinmuzo, *Kirk!* and without precise locality, *Buchanan*, 46! 204!

16. **D. phaseoloides,** *Pax in Engl. Jahrb.* xv. 149. Stems slender, twining, unarmed, pubescent. Leaves alternate, distinctly petiolate, trifoliolate, subcoriaceous, pubescent on both sides; leaflets obscurely stalked; end leaflet oblong, with a distinct mucro, 2–2½ in. long, ¾ in. broad at the middle; venation pinnate; side leaflets slightly obtuse. Male flowers in short dense spikes fascicled in the axils of the leaves or produced from leafless nodes; bracts broadly ovate, cuspidate, densely pubescent. Male flowers seen only in the bud stage. Female flowers and fruit unknown.

Nile Land. British East Africa: Niamniam; at Gumango Hill, *Schweinfurth*, 3928!

17. **D. Vespertilio,** *Benth. in Hook. Niger Fl.* 538. Whole plant quite glabrous. Leaves alternate, subcoriaceous, trifoliolate, long-petiolate; leaflets distinctly stalked, the end one obovate-oblong, obtuse, rounded at the base, 2–3 in. long, 1–1½ in. broad above the middle, with 1–2 alternate veins branching from the midrib. Flowers unknown. Capsule with an axis 1–1¼ in. long and two transversely oblong wings 1½ in. long. Seeds unknown.

Upper Guinea. Sierra Leone, *Don!*

No specimen in the Kew Herbarium.

18. **D. (Helmia) beccariana,** *Martelli, Fl. Bogos.* 83. Stems slender, twining, unarmed, pubescent upwards. Leaves alternate, distinctly petiolate, 5-foliolate when fully developed, membranous, subglabrous or more or less pubescent; leaflets obscurely stalked, obovate or oblong, distinctly mucronate, obtuse or acute, penninerved, reaching 3–4 in. long, 1½ in. broad. Male flowers in dense fascicled shortly peduncled axillary spikes, sometimes from leafless nodes; bracts ovate, cuspidate, membranous, pubescent, twice as long as the flowers. Male perianth pubescent, $\frac{1}{16}$ in. diam.; outer segments ovate, obtuse; inner narrow. Fertile stamens 3, shorter than the perianth. Female flowers in long lax spikes. Ovary cylindrical, densely pubescent. Capsule oblong, acutely angled, glabrous, ¾ in. long. Seeds ¾ in. long, with a basal oblong wing 3 times the length of the nucleus.—*D. schweinfurthiana*, Pax in Engl. Jahrb. xv. 149. *D. pentaphylla*, A. Rich. Tent. Fl. Abyss. ii. 317, not of Linn. *D. quartiniana*, Engl. Hochgebirgsfl. Trop. Afr. 172, not A. Rich. *D. quartiniana*, var. *pentadactyla*, Pax in Engl. Jahrb. xv. 148. *Botryosicyos pentaphyllus*,

Hochst. in Schimp. Pl. Abyss. No. 1590; Flora 1844, Beil. 3; Asch. in Schweinf. Beitr. Fl. Æthiop. 202.

Nile Land. Eritrea: Keren, on Mount Deban, 4500–5500 ft., *Beccari*, 303! Galabat: Matamma, *Schweinfurth*, 586! Abyssinia: Tigre; Jelajeranne, *Schimper*, 1590! British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 1879!

Lower Guinea. Angola: Huilla, *Welwitsch*, 4045! Golungo Alto, *Welwitsch*, 4046! 4047! 4048! 4049! 4050!

Mozamb. Dist. German East Africa: Kilimanjaro, 6000 ft., *Johnston! Volkens*, 2287! British Central Africa: Nyasaland; River Namasi, *Cameron!* Shire Highlands, *Buchanan*, 69! 233! Mount Mlanje, *Scott-Elliot*, 8596! and without precise locality, *Buchanan*, 264! 642! 1094! 1206!

19. **D. Stuhlmanni,** *Harms in Engl. Pfl. Ost-Afr. C.* 146. Stems slender, wide-climbing, unarmed, pubescent when young. Leaves alternate, distinctly petiolate, 5–7-foliolate when fully developed; leaflets subsessile, penninerved, lanceolate or oblanceolate-oblong, acute or obtuse, glabrous or slightly pubescent beneath, reaching 3 in. long by 1 in. broad. Male flowers in dense axillary spikes; bracts ovate, membranous, pubescent, much longer than the flowers. Perianth campanulate, pubescent, $\frac{1}{16}$ in. diam.; segments ovate. Fertile stamens 3. Female flowers and fruit unknown.

Mozamb. Dist. German East Africa: Usaramo; Bagamayo, *Stuhlmann*, 6589! *Kirk!* British Central Africa: Nyasaland; Mount Sochi, *Kirk!*

Both this and *D. Holstii* are closely allied to *D. beccariana*.

20. **D. Holstii,** *Harms in Engl. Pfl. Ost-Afr. C.* 147. Stem slender, climbing, unarmed. Leaves alternate, distinctly petiolate, 3–5-foliolate; leaflets shortly stalked, glabrous, oblong, acute, narrowed to the base, $3\frac{1}{2}$–4 in. long, $1\frac{1}{2}$ in. broad. Male flowers in lax 1–3-nate axillary spikes 2–$2\frac{1}{2}$ in. long; bracts broadly ovate, acute or subacuminate, subglabrous or pubescent. Female flowers and fruit unknown.

Mozamb. Dist. German East Africa; Usambara, *Holst*, 527B!

No specimen at Kew.

ORDER CXL. LILIACEÆ. (By J. G. Baker.)

Flowers regular, usually hermaphrodite, rarely unisexual. Perianth inferior, petaloid, often persistent, with or without a tube; segments usually 6, more or less distinctly biseriate. Stamens 6, opposite the segments of the perianth, hypogynous or inserted in the tube or at its throat; filaments filiform or flattened; anthers versatile or basifixed, usually dehiscing longitudinally. Ovary usually 3-celled, sessile or stipitate; ovules usually anatropous, 2 collateral or many superposed; style simple or trifid; stigma usually capitate. Fruit a loculicidal or septicidal capsule or berry. Seeds globose or flattened; testa various, sometimes strophiolate; albumen copious, horny or fleshy; embryo usually straight.—Acaulescent or caulescent herbs or shrubs, sometimes

climbing. Rootstock often bulbous. Leaves very various in shape and venation. Inflorescence very various; pedicels often artïculated; bracts usually persistent. Flowers large or small, white or brightly coloured.

Species 2000–2500. Cosmopolitan.

Series A. ASPARAGACEÆ.—Rootstock never bulbous. Fruit baccate.

TRIBE I. **Smilaceæ.**—*Stems scandent. Leaves with stipular tendrils and reticulated veining. Flowers unisexual.*

The only Tropical African genus . . . . . 1. SMILAX.

TRIBE II. **Asparageæ.**—*Stems erect or scandent. Proper leaves rudimentary, their function fulfilled by cladodia. Flowers hermaphrodite in Tropical African species.*

The only Tropical African genus . . . . . 2. ASPARAGUS.

TRIBE III. **Dracæneæ.**—*Stems erect. Proper leaves developed. Flowers hermaphrodite.*

The only Tropical African genus . . . . . 3. DRACÆNA.

Series B. EULILIACEÆ.—Fruit a loculicidal capsule. Style entire.

TRIBE IV. **Hemerocalleæ.**—*Rootstock not bulbous. Leaves narrow, not fleshy. Perianth gamophyllous.*

Perianth-tube long . . . . . 4. KNIPHOFIA.
Perianth-tube short . . . . . 5. NOTOSCEPTRUM.

TRIBE V. **Aloineæ.**—*Rootstock not bulbous. Leaves fleshy. Perianth gamophyllous.*

Perianth-limb regular . . . . . 6. ALOE.
Perianth-limb irregular . . . . . 7. HAWORTHIA.

TRIBE VI. **Asphodeleæ.**—*Rootstock rarely bulbous. Inflorescence racemose, simple, or panicled; pedicels articulated. Perianth polyphyllous.*

Rootstock bulbous. Peduncle naked . . . . 8. SCHIZOBASIS.
Rootstock tuberous. Seeds hairy . . . . 9. ERIOSPERMUM.
Rootstock 0 or small. Seeds glabrous.
  Filaments densely bearded . . . . 10. BULBINE.
  Filaments glabrous.
    Perianth-segments ascending.
      Anthers versatile, not twisting up spirally . . 11. ASPHODELUS.
      Anthers basifixed, twisting up spirally . . 12. ACROSPIRA.
    Perianth-segments spreading from the base.
      Capsule shallowly lobed. Seeds not discoid . 13. ANTHERICUM.
      Capsule deeply lobed. Seeds flat.
        Racemes not subspicate . . . . 14. CHLOROPHYTUM.
        Racemes subspicate . . . . 15. DASYSTACHYS.

TRIBE VII. **Alliee.**—*Inflorescence umbellate.*

Rootstock slightly tuberous. Perianth gamophyllous, with united or distinct coronal scales at the throat 16. TULBAGHIA.
Rootstock bulbous. Perianth polyphyllous . . . 17. ALLIUM.

TRIBE VIII. **Scilleæ.**—*Rootstock bulbous. Peduncle naked. Inflorescence racemose or spicate.*

Perianth united at the base.
Outer segments of perianth caudate . . . . 18. DIPCADI.
Outer segments of perianth not caudate.
Perianth-tube curved . . . . . 19. PSEUDOGALTONIA.
Perianth-tube straight.
Capsule shallowly lobed. Seeds globose . . 20. HYACINTHUS.
Capsule deeply lobed. Seeds flat . . . 21. DRIMIA.
Perianth free to the base.
Raceme crowned by a coma of empty leafy bracts . 22. EUCOMIS.
Raceme without a coma.
Perianth-segments with a broad laxly-nerved keel . 23. ALBUCA.
Perianth-segments with a narrow keel or none.
Capsule deeply lobed. Seeds flattened . . 24. URGINEA.
Capsule shallowly lobed. Seeds turgid.
Raceme subspicate, upper flowers abortive . 25. DRIMIOPSIS.
Raceme not subspicate; upper flowers not abortive.
Stamens hypogynous. Flowers usually white . . . . . 26. ORNITHOGALUM.
Stamens perigynous. Flowers usually blue or mauve-purple . . . . 27. SCILLA.

Series C. COLCHICACEÆ.—Rootstock various. Fruit usually a septicidal capsule. Styles 3.

Style tripartite to the base.
Leaves all basal, crowded.
Blade of perianth flat at the base . . . 28. MERENDERA.
Blade of perianth concave at the base . . 29. ANDROCYMBIUM.
Leaves cauline, not crowded.
Perianth-segments united at the base . . 30. WURMBEA.
Perianth-segments free to the base.
Perianth-segments with a basal gland . . 31. ORNITHOGLOSSUM.
Perianth-segments without a basal gland . . 32. IPHIGENIA.
Style trifid only above the middle.
Perianth-segments reflexing . . . . . 33. GLORIOSA.
Perianth-segments ascending . . . . . 34. LITTONIA.
Abnormal genus, with anthers dehiscing by apical pores 35. WALLERIA.

1. **SMILAX**, Linn.; Benth. et Hook. f. Gen. Pl. iii. 763.

Flowers dicœcious. Perianth-segments free to the base, subequal. Male flowers: Stamens usually 6, hypogynous; filaments short or long; anthers dehiscing introrsely. Female flowers: Staminodes 6 or fewer. Ovary 3-celled; ovules 1–2 in a cell, pendulous, orthotropous; style 0 or very short; stigmas 3, recurved. Berry globose, 1–2-seeded. Seeds with a small oblong embryo enclosed in abundant hard albumen.—Climbing shrubs, with woody or herbaceous, often prickly, stems.

Leaves usually alternate, with reticulated veining, and a pair of stipular tendrils from the base of the petiole. Flowers small, greenish, arranged in simple or racemose axillary umbels.

Species nearly 200, spread through the warmer regions of both hemispheres.

Leaves deeply cordate. Umbels racemose . . .	1. *S. aspera.*
Leaves rounded at the base. Umbels simple . .	2. *S. kraussiana.*

1. **S. aspera,** *Linn. Sp. Plant. ed.* 1, 1028. A climbing shrub, glabrous in all its parts, with slender woody climbing prickly stems. Leaves shortly petiolate, subcoriaceous, ovate, acuminate, deeply cordate at the base, triplinerved from the base to the apex. Umbels few-flowered, forming a short raceme with a flexuose rhachis; pedicels longer than the flowers. Perianth-segments oblong. Stamens shorter than the perianth. Berry bright red, the size of a pea.—Sibth. & Sm. Fl. Græc. t. 959; A. DC. Monogr. Phanerog. i. 163; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 77, 111.

Nile Land. Eritrea: Mount Oualid, *Schweinfurth & Riva*, 2159! Abyssinia: Ankober, *Roth*, 133!

Widely spread in the Mediterranean region.

2. **S. kraussiana,** *Meisn. in Flora*, 1845, 312. A climbing shrub, glabrous in all its parts, with slender, woody, usually prickly stems, reaching a length of 15 feet. Leaves shortly petiolate, subcoriaceous, oblong or orbicular, cuspidate, broadly rounded at the base, reaching 5–6 in. long, conspicuously 3-nerved from the base to the apex; stipular tendrils long. Umbels shortly peduncled, simple, axillary, many-flowered; pedicels finally $\frac{1}{3}$–$\frac{3}{4}$ in. long. Bud oblong-cylindrical, $\frac{1}{6}$ in. long. Perianth-segments linear-oblong. Stamens rather shorter than the perianth. Berry the size of a small pea.—Kunth, Enum. v. 242; A. DC. Monogr. Phanerog. i. 171; Grant & Baker in Trans. Linn. Soc. xxix. 162, t. 106; Baker in Fl. Cap. vi. 256; Engl. Pfl. Ost-Afr. C. 145. *S. morsoniana*, Kunth, Enum. v. 241. *S. mossambicensis*, Garcke in Peters, Reise Mossamb. Bot. 518.

Upper Guinea. Senegambia, *Leprieur!* Sierra Leone, *Morson! Barter! Scott-Elliot*, 4180! Lagos, *Rowland! Millen!* Niger Delta: River Nun, *Barter*, 20115! Cameroons: Cameroon Mountain, 4000 ft., *Mann*, 1271! Yaunde, *Zenker & Staudt*, 585!

Nile Land. British East Africa: Madi, *Speke & Grant*, 739/5! Niamniam: at the River Boddo, *Schweinfurth*, 3847! Nganye, *Schweinfurth*, 3952!

Lower Guinea. Gaboon River, *Mann*, 954! French Congo, *Griffon du Bellu*, and many other collectors. Lower Congo: Stanleypool, *Büttner*, 522! *Welwitsch*, 3862! 3863! 3864! 3865!

Mozamb. Dist. Zanzibar, *Kirk*, 21! German East Africa: Usambara; Silai, *Holst*, 2324! Maschewa, 8724! Kilimanjaro, up to 6000 ft. (ex *Engler*); Uzinja; Mgomba (Ugomba?), *Speke & Grant*, 207! Usagara; Mdhoonwi River, *Speke & Grant!* Portuguese East Africa; Morambala Mountain, 3500 ft., *Kirk!* British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 48! *Scott-Elliot*, 8569! near Mount Sochi, 3000 ft., *Kirk!* Mount Malosa and Mount Zomba, 4000–6000 ft.,

Whyte! Nyika Plateau, 6000–7000 ft., *Whyte!* and without precise locality, *Buchanan*, 95!

Also in Natal.

2. **ASPARAGUS**, Linn.; Benth. et Hook. f. Gen. Pl. iii. 765.

Flowers hermaphrodite in the Tropical African species. Perianth campanulate, cut down to the base into 6 subequal biseriate segments. Stamens 6, hypogynous or attached to the base of the segments; filaments short, filiform or slightly flattened; anthers oblong, dorsifixed, dehiscing introrsely. Ovary ovoid, 3-celled; ovules 2–8 in a cell; style short; stigmas 3, recurved. Fruit a globose berry. Seeds often reduced to 1; embryo cylindrical; albumen horny.—Stem herbaceous or woody, often climbing. Leaves minute, bract-like, often spinose. Cladodia usually fascicled, subterete or flat. Flowers usually axillary, rarely racemose.

Species 100, spread throughout the Tropical and Temperate regions of the Old World.

Cladodia subulate. Spur not pungent. Flowers 1–2-nate.
- Cladodia $\frac{1}{4}$—$\frac{1}{3}$ in. long.
  - Cladodia 1–3-nate . . . . . 1. *A. virgatus, B*
  - Cladodia 2–6-nate . . . . . 2. *A. exuvialis.*
  - Cladodia densely fascicled . . . . . 3. *A. petersianus.*
- Cladodia $\frac{1}{2}$—$\frac{3}{4}$ in. long.
  - Stem erect . . . . . 4. *A. psilurus.*
  - Stem decumbent, subscandent . . . . 5. *A. benguellensis.*

Cladodia subulate. Spur not pungent. Flowers umbellate.
- Cladodia obsolete . . . . . 6. *A. shirensis.*
- Cladodia $\frac{1}{8}$—$\frac{1}{4}$ in. long . . . . . 7. *A. pilosus.*
- Cladodia $\frac{1}{2}$ in. long . . . . . 8. *A. conglomeratus.*
- Cladodia 1 in. long . . . . . 9. *A. hereroensis.*

Cladodia subulate. Spur pungent. Flowers 1–2-nate.
- Cladodia obsolete or solitary.
  - Branchlets very long . . . . . 10. *A. equisetoides.*
  - Branchlets not very long . . . . . 11. *A. nudicaulis.*
- Cladodia few in a cluster.
  - Cladodia very short.
    - Spine uncinate . . . . . 12. *A. Pauli-Gulielmi.*
    - Spine straight, conical . . . . . 13. *A. bechuanicus.*
    - Spine straight, subulate . . . . . 14. *A. Judtii.*
  - Cladodia 9–15 lin. long . . . . . 15. *A. Schweinfurthii.*

Cladodia many in a cluster.
- Cladodia very short.
  - Cladodia very slender.
    - Branches not flexuose.
      - Spines straight . . . . . 16. *A. naxaensis.*
      - Spines uncinate . . . . . 17. *A. flagellaris.*
    - Branches flexuose . . . . . 18. *A. plumosus.*
  - Cladodia moderately stout.
    - Branches glabrous . . . . . 19. *A. zanzibaricus.*
    - Branches pubescent . . . . . 20. *A. pubescens.*
- Cladodia $\frac{1}{4}$—$\frac{1}{2}$ in. long.
  - Branchlets glabrous . . . . . 21. *A. deflexus.*

Branchlets pubescent . . . . . 22. *A. Nelsii.*
Cladodia $\frac{1}{2}$ in. or more long.
Stems erect . . . . . 23. *A. mozambicus.*
Stems climbing . . . . . 24. *A. Lugardi.*
Cladodia subulate. Spur pungent. Flowers umbellate.
Cladodia 3–6 in a cluster.
Branches pubescent . . . . . 25. *A. puberulus.*
Branches glabrous . . . . . 26. *A. irregularis.*
Cladodia many in a cluster.
Cladodia $\frac{1}{4}$–$\frac{1}{2}$ in. long . . . . . 27. *A. asiaticus.*
Cladodia $\frac{1}{2}$–1 in. long.
Cladodia very slender . . . . . 28. *A. angolensis.*
Cladodia not very slender.
Pedicels $\frac{1}{6}$–$\frac{1}{4}$ in. long . . . . . 29. *A. africanus.*
Pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long . . . . . 30. *A. laricinus.*
Cladodia usually flat. Flowers racemose.
Cladodia subulate or slightly flattened . . . 31. *A. racemosus.*
Cladodia linear.
Cladodia $\frac{1}{2}$–1 in. long.
Pedicels articulated at the tip . . . . 32. *A. Buchanani.*
Pedicels articulated at the middle.
Racemes 2–3 in. long . . . . . 33. *A. æthiopicus.*
Racemes 3–6 in. long . . . . . 34. *A. drepanophyllus.*
Cladodia $1\frac{1}{2}$–3 in. long . . . . . 35. *A. falcatus.*
Cladodia ovate, solitary. Flowers 1–2-nate (*Myrsiphyllum*, Willd.) . . . . . 36. *A. medeoloides.*

1. **A. virgatus,** *Baker in Saund. Ref. Bot. t.* 214. A much-branched erect undershrub, reaching a height of 5–6 ft.; branchlets many, slender, angled, ascending, glabrous. Leaves without any spiny spur. Cladodia 1–3 in a cluster, firm, ascending, reaching $\frac{1}{4}$–$\frac{1}{3}$ in. long. Flowers 1–2 from a node; pedicels $\frac{1}{6}$–$\frac{1}{4}$ in. long, articulated below the middle. Perianth $\frac{1}{8}$ in. long, opening widely. Anthers oblong, $\frac{1}{3}$ the length of the filaments. Berry $\frac{1}{6}$ in. diam., 1-seeded.—Baker in Journ. Linn. Soc. xiv. 606, and in Fl. Cap. vi. 259.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, *Buchanan,* 157! Zomba, *Whyte!*

Also in South Africa.

2. **A. exuvialis,** *Burch. Trav.* i. 432. Stem slender, woody, very flexuose, with the white epidermis peeling off; branchlets deflexed. Leaves with only a small deltoid spur at the base. Cladodia very slender, subulate, 2–6-nate, $\frac{1}{4}$–$\frac{1}{2}$ in. long. Flowers 1–2-nate; pedicels $\frac{1}{12}$–$\frac{1}{8}$ in. long, articulated below the middle. Perianth campanulate, $\frac{1}{12}$–$\frac{1}{8}$ in. long; segments oblong. Stamens $\frac{2}{3}$ the length of the perianth. Berry globose, small.—Baker in Journ. Linn. Soc. xiv. 608, and in Fl. Cap. vi. 259.

Mozamb. Dist. British Central Africa: Lake Ngami, *Schinz,* 900!

No specimen at Kew from Tropical Africa.

Widely spread in South Africa.

3. **A. petersianus,** *Kunth, Enum.* v. 72. Stems erect, glabrous, smooth, terete, very much branched; branches crowded, spreading; branchlets spreading, 4–5 in. long. Leaves not produced into a basal spur. Cladodia in dense crowded fascicles, capillary, curved, angled, $\frac{1}{4}$–$\frac{1}{3}$ in. long. Flowers and fruit unknown.—Garcke in Peters, Reise Mossamb. Bot. 520; Baker in Journ. Linn. Soc. xiv. 614, partly.

Mozamb. Dist. Portuguese East Africa: Cape Cabeceira, *Peters.*

No specimen at Kew.

4. **A. psilurus,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 253. An erect herb, 2–3 ft. long, with the habit of *A. officinalis.* Branchlets copious, slender, ascending, $\frac{1}{2}$–1 ft. long. Leaves without a spiny spur. Cladodia 6–8 in a cluster, subulate, ascending, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Flowers solitary or in pairs, often produced from leafless nodes; pedicels $\frac{1}{6}$–$\frac{1}{4}$ in. long, articulated at the middle. Perianth $\frac{1}{8}$–$\frac{1}{6}$ in. long; segments spreading very little. Anthers minute, oblong. Berry when dried $\frac{1}{6}$ in. diam.

Lower Guinea. Angola: Pungo Andongo; frequent in thickets at Cuanza, *Welwitsch,* 3868! 3869! 3870! 3871!

5. **A. benguellensis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 253. A decumbent glabrous subscandent shrub. Branches copiously pinnate; branchlets ascending or spreading, 4–6 in. long, with short internodes. Spur of lower leaves not spinous. Cladodia 3–6 in a cluster, slender, subulate, ascending, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Flowers usually 1–2, rarely 3–4 in a cluster; pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long, articulated at the middle. Perianth funnel-shaped, $\frac{1}{4}$ in. long. Anthers oblong, minute, much shorter than the filaments.

Lower Guinea. Angola: Mossamedes and Huilla; in thickets at Mumpullo, *Welwitsch,* 3872! 3873!

6. **A. shirensis,** *Baker.* A climbing shrub. Branches long, slender, terete, densely pubescent, whiplike, with a few short ($\frac{1}{4}$–$\frac{1}{2}$ in. long) branchlets spreading from them at right angles and ending in a cluster of flowers. Leaves without any spinous spur. Cladodia entirely obsolete. Flowers several in a cluster; pedicels very slender, $\frac{1}{6}$ in. long, articulated a little above the base. Perianth $\frac{1}{12}$ in. long; segments scarcely spreading. Anthers oblong, minute, much shorter than the filaments.

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan,* 1003!

7. **A. pilosus,** *Baker in Journ. Linn. Soc.* xiv. 610. A climbing shrub, with slender white densely pilose subterete branchlets, with lower internodes $\frac{1}{4}$–$\frac{1}{2}$ in. long. Leaves without a pungent spur. Cladodia 3–8 in a cluster, ascending, subulate, rigid, $\frac{1}{8}$–$\frac{1}{4}$ in. long. Flowers 2–6 to a node; pedicels $\frac{1}{8}$–$\frac{1}{6}$ in. long, articulated at the middle. Perianth $\frac{1}{12}$ in. long; segments scarcely spreading. Anthers minute, oblong, much shorter than the filaments.

Mozamb. Dist. British Central Africa: Ngamiland; near Lake Ngami, *McCabe* 15!

8. **A. conglomeratus,** *Baker*. Stems much-branched; branches long, virgate, erecto-patent, pale green, pubescent; internodes long; leaves without a pungent spur. Clusters of cladodia 1 in. diam.; cladodia very numerous, slender, setaceous, rigid. Flowers many to a cluster, hermaphrodite; pedicels $\frac{1}{4}$ in. long, articulated near the base. Perianth white, $\frac{1}{8}$ in. long; segments oblanceolate, reflexing. Stamens a little shorter than the perianth; anthers minute, oblong; filaments subulate. Ovary turbinate.

Mozamb. Dist. British Central Africa: Ngamiland; Kwebe, *Lugard*, 52!

9. **A. hereroensis,** *Schinz in Bull. Herb. Boiss.* iv. *App.* iii. 43. An erect very much branched undershrub; branches woody, terete, red-brown, glabrous, patent. Leaves spurred at the base. Cladodia fascicled, ascending, subulate, straight or curved, reaching more than 1 in. in length. Berries solitary in the axils of the leaves.

Lower Guinea. German South-west Africa: Hereroland, *Fleck*, 549.

No specimen in the Kew Herbarium.

Also in Great Namaqualand.

10. **A. equisetoides,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 253. A much-branched shrub, with erecto-patent pinnate main branches and slender erecto-patent branchlets $\frac{1}{2}$–1 ft. long. Leaves with a small deflexed pungent spur. Cladodia usually absent, rarely solitary, subulate, $\frac{1}{6}$–$\frac{1}{4}$ in. long, appressed to the branchlets. Flowers not seen, probably axillary.

Lower Guinea. Angola: Pungo Andongo; in sandy ground on the banks of the River Cuanza, *Welwitsch*, 3846! 3847!

11. **A. nudicaulis,** *Baker*. An erect undershrub 3–4 ft. high, with stout main stems armed at the nodes with short deflexed pungent spines; branches and branchlets many, ascending, tough, striated, pale-green, glabrous, the latter slender, distant, 2–6 in. long, with long internodes. Cladodia entirely absent. Flowers solitary, axillary; pedicels decurved, finally $\frac{1}{4}$ in. long, articulated at the middle. Berry the size of a small pea, bright red.

Mozamb. Dist. German East Africa: Kilimanjaro; on steppes near Lake Chala, 3000 ft., *Volkens*, 1806!

No specimen at Kew.

Nearly allied to the Cape *A. denudatus*, Baker.

12. **A. Pauli-Gulielmi,** *Solms in Schweinf. Beitr. Fl. Æthiop.* 203. A much-branched erect undershrub, 4–5 ft. high. Main stems woody; branchlets long, slender, terete, glabrous or pubescent, ascending. Leaves of the main stem and branchlets furnished with a pungent uncinate woody spur. Cladodia 1–5 from a node, subulate, very slender, ascending, $\frac{1}{8}$–$\frac{1}{4}$ in. long. Flowers solitary or in pairs, axillary; pedicels $\frac{1}{8}$–$\frac{1}{6}$ in. long, ascending or deflexed, articulated above the base. Perianth $\frac{1}{16}$–$\frac{1}{12}$ in. long; segments spreading. Anthers minute, oblong,

much shorter than the filaments. Berry the size of a small pea.—Baker in Journ. Linn. Soc. xiv. 613; Grant & Baker in Trans. Linn. Soc. xxix. 161, t. 105.

Upper Guinea. Lagos: interior districts, *Rowland!* Abeokuta, *Irving*, 70! Niger Territory: Nupe, *Barter*, 1125!

Nile Land. Nubia, *Prince Paul William of Wurtemburg*, *Cienkowski*. White Nile, *Petherick!* British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 1400! 1513! ser. iii. 109! Denka Territory: Rek District, *Schweinfurth*, 1921! Madi, *Speke & Grant!* Uganda, *Wilson*, 41!

Lower Guinea. Hereroland, *Hopfner*, 65 (ex *Schinz*).

Mozamb. Dist. German East Africa: East shore of Lake Tanganyika, *Scott-Elliot*, 8285! Portuguese East Africa: Zambesi Delta; Kongoni River, *Kirk!* British Central Africa: Nyasaland; in woods between Blantyre and Matope, *Scott!*

Var. *Daltoni*, Baker in Journ. Linn. Soc. xiv. 613. Flowers smaller than in the type; segments narrower, subacute; pedicels all abruptly deflexed.

Upper Guinea. Niger Territory: Rabba, on the River Niger, *Dalton!*

13. **A. bechuanicus,** *Baker*. A climber. Stems slender, woody, with close copiously pinnate slender glabrous branches. Leaves produced at the base into a small pungent conical straight spur. Cladodia 3–6-nate, rigid, setaceous, ascending, $\frac{1}{8}$–$\frac{1}{4}$ in. long. Flowers hermaphrodite, solitary; pedicels $\frac{1}{4}$ in. long, articulated below the middle. Perianth $\frac{1}{8}$ in. long; segments oblong, ascending, white with a broad green keel. Stamens as long as the perianth; anthers oblong, minute, bright-yellow. Ovary globose; styles not reaching up to the anthers.

Mozamb. Dist. British Central Africa: Ngamiland; Nakalechwe, *Lugard*, 25!

14. **A. Judtii,** *Schinz in Bull. Herb. Boiss.* iv. *App.* iii. 44. A divaricate undershrub. Branches spreading, woody, pungent at the tip. Leaves produced at the base into straight subulate spines. Cladodia 3–6-nate, subulate, $\frac{1}{8}$–$\frac{1}{5}$ in. long. Flowers 2–3-nate in the axils of the leaves.

Lower Guinea. German South-west Africa: Great Namaqualand; Hoachanas, *Fleck*, 901.

No specimen in the Kew Herbarium.

The locality is a little south of the Tropic, but there can be little doubt that the plant also occurs within the Tropical limits.

15. **A. Schweinfurthii,** *Baker in Journ. Linn. Soc.* xiv. 616. A tall much-branched erect shrub, glabrous in all its parts. Branches long, straight; branchlets many, ascending. Leaves produced at the base into small pungent spines. Cladodia 3–6 in a fascicle, rigid, subulate, ascending, 9–15 lin. long. Flowers in axillary pairs; pedicels ascending, $\frac{1}{4}$–$\frac{1}{3}$ in. long, articulated near the base. Perianth $\frac{1}{12}$ in. long; segments not spreading. Stamens nearly as long as the perianth.

Nile Land. Galabat: on the banks of the River Gendua, *Schweinfurth*, 29!

16. **A. namaensis,** *Schinz in Bull. Herb. Boiss.* iv. *App.* iii. 44. An erect much-branched undershrub. Branches and branchlets virgate.

Leaves produced at the base into short straight spines. Cladodia very slender, setaceous, fascicled at the tips of the branchlets, $\frac{1}{12}$–$\frac{1}{4}$ in. long. Flowers hermaphrodite.

Lower Guinea. German South-west Africa: Great Namaqualand; without precise locality, *Fleck*, 307A.

No specimen at Kew; it may be an extra-tropical species.

17. **A. flagellaris,** *Baker in Journ. Linn. Soc.* xiv. 614. A much-branched shrub. Branches smooth, terete; branchlets nearly straight, angled towards the tip. Leaves produced at the base into curved spines. Cladodia very slender, subulate, $\frac{1}{4}$ in. long. Pedicels axillary, geminate, $\frac{1}{6}$ in. long, articulated below the middle. Perianth campanulate. Anthers $\frac{1}{3}$ the length of the filaments.—*Asparagopsis flagellaris*, Kunth, Enum. v. 103.

Upper Guinea. Senegambia: near Richard Toll, *Lelievre*.

I have not seen an authenticated specimen of this species.

18. **A. plumosus,** *Baker in Journ. Linn. Soc.* xiv. 613. A shrubby climber. Stems slender, terete, very flexuose; branches copiously pinnate, with spreading branchlets. Leaves with a small pungent spur. Cladodia 6–12 in a cluster, setaceous, very slender, $\frac{1}{6}$–$\frac{1}{4}$ in. long. Flowers axillary, usually solitary; pedicels $\frac{1}{4}$ in. long, articulated at the middle. Perianth $\frac{1}{12}$ in. long; segments spreading widely. Berry the size of a small pea, usually 1-seeded.—Fl. Cap. vi. 260; Flore des Serres, t. 2413–4; Ill. Hort. xxvii. t. 394; Gard.Chron. 1880, xiii. 749, fig. 129; Le Jardin, 1887, 187, fig. 85; Engl. Hochgebirgsfl. Trop. Afr. 168.

Nile Land. British East Africa: Nyika country, near Mombasa, *Wakefield!*

Mozamb. Dist. German East Africa: Kilimanjaro, 2000–3000 ft., *Johnston!* at Kwa Kinabo, 4500 ft., *Volkens*, 1955! at Usere, 4500 ft., *Volkens*, 1970! and on the banks of the Quare Brook, 3500 ft., *Volkens*, 2039! Usambara; Maschewa, *Holst*, 8559! Usagara Mountains, *Kirk!* Portuguese East Africa: Makua; Namuli Hills, *Last!* British Central Africa: Nyasaland; Nyika Plateau, 6600–7500 ft., *Whyte!* and without precise locality, *Buchanan*, 750! 1470!

Also in South Africa.

19. **A. zanzibaricus,** *Baker in Journ. Linn. Soc.* xiv. 614. A scandent shrub. Main stems terete, glabrous, woody; branchlets copiously and regularly pinnate, spreading. Leaves produced at the base into stout pungent spines. Cladodia 3–8-nate on the branchlets, densely congested at their tips, subulate, moderately stout, $\frac{1}{6}$–$\frac{1}{4}$ in. long. Pedicels geminate, $\frac{1}{8}$ in. long, articulated below the middle. Perianth not seen. Fruit the size of a pea.

Mozamb. Dist. Zanzibar: near Kokotoni, *Hildebrandt*, 1048! German East Africa: Kilimanjaro, 3000 ft., *Johnston*, 188!

20. **A. pubescens,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 254. A much-branched climbing shrub. Branchlets pubescent, woody, whitish, $\frac{1}{2}$–1 ft. long. Leaves of the branches with a short deflexed pungent spur. Cladodia 4–8 in a cluster, subulate, rigid, not very slender, $\frac{1}{6}$–$\frac{1}{4}$ in. long. Pedicels axillary, 1–2-nate, $\frac{1}{8}$–$\frac{1}{6}$ in. long, often

produced from sterile nodes, articulated below the middle. Perianth $\frac{1}{8}$ in. long. Anthers oblong, much shorter than the filaments. Berry the size of a small pea.—Engl. Hochgebirgsfl. Trop. Afr. 168.

Lower Guinea. Angola: Huilla; temperate region, in dry pastures at Catumba, *Welwitsch*, 3878!

21. **A. deflexus,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 254. A much-branched climbing shrub. Branches slender, glabrous, the lower deflexed; branchlets many, short. Leaves with a short deflexed pungent spur. Cladodia 6–10 in a cluster, subulate, very slender, $\frac{1}{4}$–$\frac{1}{3}$ in. long. Flowers 1–2 axillary or 4–6 from the tip of the branchlets; pedicels $\frac{1}{8}$–$\frac{1}{6}$ in. long, articulated at the middle. Perianth $\frac{1}{8}$ in. long; segments oblong-spathulate. Stamens distinctly shorter than the perianth; anthers oblong, minute.

Lower Guinea. Angola: Pungo Andongo, *Welwitsch*, 3874!

22. **A. Nelsii,** *Schinz in Bull. Herb. Boiss.* iv. *App.* iii. 44. A much-branched undershrub. Branches woody, terete; branchlets rigid, clothed with whitish pubescence; upper internodes $\frac{1}{8}$ in. long. Leaves produced at the base into hard deflexed brown spines. Cladodia fascicled, subulate, $\frac{1}{4}$–$\frac{1}{2}$ in. long. Flowers unknown.

Lower Guinea. German South-west Africa: Hereroland, *Nels*, 70.

No specimen at Kew.

23. **A. mozambicus,** *Kunth, Enum.* v. 72. Stems erect, much-branched, glabrous. Branches spreading; branchlets angled, glabrous. Leaves of the main branches produced into a short pungent spur at the base. Cladodia 6–7 or more in a cluster, capillary, curved, $\frac{1}{2}$–$\frac{5}{8}$ in. long, 2–3 times longer than the internodes. Flowers and fruit unknown.—Garcke in Peters, Reise Mossamb. Bot. 520; Baker in Journ. Linn. Soc. xiv. 629.

Mozamb. Dist. Portuguese East Africa: Mozambique, *Peters!*

No specimen at Kew.

24. **A. Lugardi,** *Baker.* A climbing shrub. Branches long, spreading, slender, green; branchlets distant, spreading, pubescent. Leaves produced into a pungent spur at the base. Cladodia many to a node, setaceous, very slender, $\frac{1}{2}$ in. long. Flowers hermaphrodite, 1–2 to a node; pedicels $\frac{1}{4}$ in. long, articulated below the middle. Perianth white, $\frac{1}{8}$ in. long; segments oblanceolate, obtuse, keeled with brown. Stamens nearly as long as the perianth; anthers minute, oblong, bright yellow. Ovary turbinate; styles reaching up to the anthers.

Mozamb. Dist. British Central Africa: Ngamiland, near Lake Ngami, *Lugard*, 31!

25. **A. puberulus,** *Baker in Journ. Linn. Soc.* xiv. 618. A much-branched climbing shrub. Branches long, flexuose, terete, pubescent; branchlets long, spreading, curved. Leaves produced at the base into pungent subulate deflexed spines. Cladodia 3–6 in a cluster, $\frac{1}{6}$–$\frac{1}{4}$ in.

long, often absent from the floriferous nodes. Flowers umbellate, often produced from the tip of short branchlets; pedicels $\frac{1}{6}$ in. long, articulated at the middle. Perianth very small; segments not spreading. Stamens nearly as long as the perianth.

Mozamb. Dist. British Central Africa: Nyasaland; Manganja Hills, at Magomero, *Meller !*

26. **A. irregularis,** *Baker in Journ. Linn. Soc.* xiv. 620. A climbing shrub. Branches slender, flexuose, terete, glabrous; branchlets many, ascending. Leaves produced at the base into a small pungent spur. Cladodia subulate, slender, $\frac{1}{4}$–$\frac{1}{2}$ in. long, 3–6 in a cluster from the nodes, more numerous at the top of the branchlets, absent altogether from many of the flowering nodes. Flowers often several in a cluster; pedicels $\frac{1}{6}$–$\frac{1}{4}$ in. long, articulated below the middle. Perianth $\frac{1}{12}$ in. long; segments not spreading. Stamens nearly as long as the perianth.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, at the foot of Mount Chiradzulu, *Kirk !*

27. **A. asiaticus,** *Linn. Sp. Plant. ed.* 1, 313; *Mant.* 366. A much-branched climbing shrub. Main stems woody; branches copiously pinnate; branchlets short. Leaves produced at the base into a deflexed pungent spine. Cladodia 6–15 in a cluster, subulate, not very slender, $\frac{1}{4}$–$\frac{1}{2}$ in. long. Flowers often several in an axillary cluster; pedicels $\frac{1}{8}$–$\frac{1}{4}$ in. long, articulated below the middle. Perianth $\frac{1}{8}$ in. long; segments permanently ascending. Stamens nearly as long as the perianth. Ovules several in a cell. Berry the size of a pea, usually 1-seeded.—Baker in Journ. Linn. Soc. xiv. 618, and in Fl. Cap. vi. 265; Engl. Hochgebirgsfl. Trop. Afr. 168; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 77. *A. mitis,* A. Rich. Tent. Fl. Abyss. ii. 319. *A. scaberulus,* A. Rich. Tent. Fl. Abyss. ii. 320. *A. Steudneri,* Schweinf. in Pl. Cent. Afr. Exsic. No. 309. *Asparagopsis Willdenowii,* Kunth, Enum. v. 86.

Nile Land. Nubia: Mount Erkowit, near Suakin, *Schweinfurth,* 309! Eritrea: Keren, *Beccari,* 36! Abyssinia: Ankober, *Roth !* Doka Keit, *Roth,* 549! near Adowa, *Schimper,* 296! and without precise locality, *Schimper,* 181! 240! 728! 1431! Somaliland, *Mrs. Lort-Phillips !* British East Africa: Wanderobo; near Lake Nakuru, 6000 ft., *Scott-Elliot,* 6840! east side of Lake Albert Edward, *Scott-Elliot,* 8071!

Mozamb. Dist. Lake Tanganyika, *Cameron !* Portuguese East Africa: Quilimane, *Stuhlmann,* 613! 614! Zambesi River; Lupata, *Kirk !* near Tete, *Kirk !*

Also in South Africa, Arabia, and Tropical Asia.

28. **A. angolensis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 254. A much-branched subscandent shrub. Branches pubescent, flexuose; branchlets numerous, erecto-patent. Leaves of the branches with a large deflexed pungent spur. Cladodia densely fascicled, very slender, rigid, subulate, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Flowers many in a fascicle; pedicels $\frac{1}{6}$ in. long, articulated near the base. Perianth funnel-shaped, $\frac{1}{8}$ in. long.

Stamens as long as the perianth; anthers globose, minute. Berry the size of a pea.—Engl. Hochgebirgsfl. Trop. Afr. 169.

Lower Guinea. Angola: Huilla; in the subtemperate region, 3800–5500 ft., *Welwitsch*, 3879!

29. **A. africanus,** *Lam. Encyc.* i. 295. A much-branched tall shrub, glabrous in all its parts. Main stems terete, woody; branchlets straight, virgate. Leaves produced at the base into pungent spines. Cladodia densely fascicled, subulate, not very slender, $\frac{1}{2}$–1 in. long. Flowers umbellate from the sides and tips of the branchlets; pedicels $\frac{1}{6}$–$\frac{1}{4}$ in. long, articulated below the middle. Perianth $\frac{1}{12}$–$\frac{1}{8}$ in. long; segments not spreading. Stamens nearly as long as the perianth; anthers small, oblong. Berry $\frac{1}{6}$ in. diam., usually 1-seeded.—Baker in Journ. Linn. Soc. xiv. 619; and in Fl. Cap. vi. 265; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 77. *A. abyssinicus*, Hochst. in Schimp. Pl. Abyss. No. 2216; A. Rich. Tent. Fl. Abyss. ii. 319; Engl. Hochgebirgsfl. Trop. Afr. 169; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 76. *A. retrofractus*, Forsk. Pl. Ægypt. Arab. 73, non Linn. *Asparagopsis Lamarckii*, Kunth, Enum. v. 87.

Upper Guinea. Senegambia: Mbidjem, *Thierry*, 204! and without precise locality, *Heudelot*, 462! Togoland: Krakje (Kratshi), on the River Volta, *Krause!* Niger Territory: Nupe; on sandy plains, *Barter*, 1516!

Nile Land. Eritrea: Keren, 4500 ft., *Beccari!* Lalamba Mountain, near Keren, 5800 ft., *Schweinfurth*, 844! near Amba Tokhan, *Schweinfurth & Riva*, 619! Abyssinia: Tacazze Valley, at the foot of mountains, near Gurrsarfa, *Schimper*, 48! 2216! and without precise locality, *Schimper*, 926! White Nile, *Petherick! Schweinfurth*, 1099! Gazelle River, at Meshra, *Schweinfurth*, 1275! Kordofan: Mulbes, *Pfund*, 861! Somaliland: Boobi, *James & Thrupp!* Hammar, *Miss Edith Cole! Mrs. Lort-Phillips!* between Ospoli and Karanle, *Riva*, 1059. British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 2390! Ruwenzori; in forest, 7000–8000 ft., *Scott-Elliot*, 7846! Uganda, *Scott-Elliot*, 7181! 7275! Ukamba, 5000–6000 ft., *Scott-Elliot*, 6490! Mombasa, *Wakefield!* Rabai Hills, near Mombasa, *Taylor*.

Lower Guinea. Lower Congo, *Smith! Laurent*. French Congo: Brazzaville, *Dybowski!* Angola: Pungo Andongo, in woods, *Welwitsch*, 3851! 3852! 3856 3875! 3876! Chella Mountains, *Johnston!*

Mozamb. Dist. German East Africa: Kilimanjaro, 4000–8000 ft., *Volkens*, 1912! 1971! British Central Africa: Urungu; Fwambo, 5200 ft., *Nutt!* Nyasaland; Mount Zomba, *Whyte!* Northern Zambesia; Boruma, on the River Zambesi, *Menyharth*, 917!

Also Arabia, Socotra, and South Africa.

30. **A. laricinus,** *Burch. Trav.* i. 537. A tall much-branched shrub. Branches whitish, woody, terete, glabrous, slightly flexuose; branchlets many, ascending. Leaves produced into a small deflexed pungent spur. Cladodia rigid, subulate, $\frac{3}{4}$–1 in. long, densely fascicled, not very slender. Flowers densely umbellate; pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long, articulated below the middle. Perianth $\frac{1}{8}$ in. long; segments not spreading. Stamens rather shorter than the perianth.—Kunth, Enum. v. 75; Baker in Journ. Linn. Soc. xiv. 620, and in Fl. Cap. vi. 267.

Mozamb. Dist. British Central Africa: near Lake Ngami, common throughout the district from the Orange River to the Cunene River, *Schinz !*

Also in South Africa.

31. **A. racemosus,** *Willd. Sp. Plant.* ii. 152. A climbing shrub. Branches terete, woody, glabrous; branchlets copious, spreading. Leaves produced at the base into a pungent spur. Cladodia 2–6 in a cluster, subulate or slightly flattened, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Racemes solitary or fascicled, lax, 1–2 in. long; pedicels $\frac{1}{6}$–$\frac{1}{5}$ in. long, articulated at the middle; bracts minute, membranous. Perianth white, $\frac{1}{12}$–$\frac{1}{8}$ in. long; segments spreading. Stamens rather shorter than the perianth. Berries usually 1-seeded, $\frac{1}{6}$–$\frac{1}{5}$ in. diam.—Wight, Ic. t. 2056; Baker in Journ. Linn. Soc. xiv. 623; Engl. Hochgebirgsfl. Trop. Afr. 169; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 76. *A. petitianus*, A. Rich. Tent. Fl. Abyss. ii. 320. *Asparagopsis abyssinica*, Kunth, Enum. v. 101.

Upper Guinea. Ashanti; Akroful, *Cummins*, 31 !

Nile Land. Nubia: Mersa Sheikh Barud, *Schweinfurth*, 504! Eritrea: Geleb, 4800–5800 ft., *Schweinfurth*, 1118; Amba, 6100 ft., *Schweinfurth*, 1391! Lalamba Peak, near Keren, 6000 ft., *Schweinfurth*, 963. Saganeiti, 7100 ft., *Schweinfurth*, 1236. Abyssinia: Aferbeine, *Roth*, 550! Mount Semayata, *Schimper*, 374! and without precise locality, *Schimper*, 240! 725! 1075! Somaliland: Valley of the River Ruspoli, *Riva*, 851! British East Africa: Madi, in woods, *Speke & Grant*, 38! Mombasa, *Hildebrandt*, 1049B! Uluguru, *Stuhlmann*, 8874!

Lower Guinea. Angola: Loanda and Huilla; in thickets, *Welwitsch*, 3848! 3849! 3850! 3855! German South-west Africa: Amboland; Grootfontein, *Schinz*, 41!

Mozamb. Dist. Zanzibar, *Kirk !* German East Africa: Usambaro; Mascheua, *Holst*, 3488! between Kilimanjaro and Mount Meru, 3000 ft., *Volkens*, 2034! Lake Tanganyika, *Cameron !* British Central Africa: Urungu; Niomkolo, near Lake Tanganyika, *Carson !* Ngamiland; Nakalechwe, *Lugard*, 25A!

Also in Tropical Asia.

32. **A. Buchanani,** *Baker in Kew Bulletin*, 1893, 211. A much-branched climbing shrub, with slender glabrous branchlets. Leaves produced into a small pungent spur. Cladodia 2–6 in a cluster, narrowly linear, rigid, 1-nerved, $\frac{3}{4}$ in. long. Racemes copious, lateral, lax, $1\frac{1}{2}$–2 in. long; pedicels erecto-patent, rather longer than the flowers, articulated at the tip; bracts minute, persistent, ovate-lanceolate. Perianth $\frac{1}{12}$ in. long; segments spreading from the base. Stamens as long as the perianth; anthers small, globose.

Mozamb. Dist. German East Africa: Karagwe; on dry hills at 4000–5000 ft., *Scott-Elliot*, 8196! Portuguese East Africa: Lupata, on the River Zambesi, *Kirk !* British Central Africa: Nyasaland; Blantyre, *Buchanan !* Namasi River, *Cameron*, 23! and without precise locality, *Buchanan*, 1503!

33. **A. æthiopicus,** *Linn. Mant.* 63. A climbing shrub. Branches woody, terete, glabrous; branchlets angled, sulcate, curved. Leaves produced at the base into a pungent spine. Cladodia 3–6 in a cluster, linear, moderately firm, distinctly costate, $\frac{1}{2}$–1 in. long. Racemes lax, axillary, 2–3 in. long; pedicels $\frac{1}{8}$–$\frac{1}{6}$ in. long, articulated at the middle; bracts minute, ovate or lanceolate. Perianth white, fragrant, $\frac{1}{12}$–$\frac{1}{8}$ in.

long; segments spreading. Stamens nearly as long as the perianth. Berry ¼ in. diam., usually 1-seeded.—Willd. Sp. Plant. ii. 153; Baker in Journ. Linn. Soc. xiv.626, and in Fl.Cap. vi. 271; Engl. Hochgebirgsfl. Trop. Afr. 169. *Asparagopsis æthiopica*, Kunth, Enum. v. 95.

Nile Land. British East Africa: Kikuyu; Ndoro, at the foot of Mount Kenia, 6000 ft., *Höhnel*, 67! Rabai Hills, near Mombasa, *Taylor*.

No specimen from Tropical Africa at Kew.

Also in South Africa.

34. **A. drepanophyllus,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 254. A much-climbing shrub. Branches slender, flexuose, glabrous; branchlets numerous, spreading. Leaves of the stout woody stems produced into a pungent spur. Cladodia usually 3-nate, unequal, spreading, linear, curved, bright green, distinctly 1-nerved, the larger ¾–1 in. long. Racemes sessile, long, 3–6 in. long; pedicels 3–6-nate, $\frac{1}{12}$–⅛ in. long, articulated at the middle. Perianth campanulate, $\frac{1}{12}$ in. long; segments oblong. Stamens shorter than the perianth.

South Central. Lunda: near the Lulua River, at Kavango, *Pogge!*

Lower Guinea. Lower Congo: in forests, *Laurent*, 76. Angola: Golungo Alto; in dense woods, *Welwitsch*, 3858! 3859! Bangala; Kitamba, on the River Kuango, *Buchner*.

35. **A. falcatus,** *Linn. Sp. Plant. ed.* 1, 313. A climbing shrub. Branches flexuose, glabrous; branchlets spreading. Leaves of the main branches produced into a large pungent spur. Cladodia 1–3 to the lateral nodes, sometimes 6–8-nate at the tips of the branchlets, linear, moderately firm, dark green, curved, 1½–3 in. long. Flowers in lax racemes; pedicels 2–3-nate, articulated at the middle. Perianth white, sweet-scented, $\frac{1}{12}$ in. long; segments spreading. Stamens rather shorter than the perianth. Berry ¼ in. diam., usually 1-seeded.—Kunth, Enum. v. 71; Baker in Journ. Linn. Soc. xiv. 626, and in Fl. Cap. vi. 271. *A. æthiopicus*, var. *ternifolius*, Baker in Saund. Ref. Bot. t. 261.

Upper Guinea. Yoruba, *Millson*, 25!

Nile Land. Somaliland, *Miss Edith Cole! Mrs. Lort-Phillips!* British East Africa: Lake Victoria Nyanza, at Berkeley Bay, *Scott-Elliot*, 7064!

Lower Guinea. Angola, *Welwitsch*, 3857! Lower Congo, *Smith*.

Mozamb. Dist. German East Africa: Mafia Island, *Bartle Frere!* Bagamoyo, *Kirk!* Kilimanjaro, 5000 ft., *Johnston!* Karagwe; near Kagera River, *Scott-Elliot*, 8146! Portuguese East Africa: Lower Zambesi; near Shupanga, *Kirk!* Morambala Mountain, 1500 ft., *Kirk!*

Also in South Africa and Tropical Asia.

36. **A. medeoloides,** *Thunb. Prodr.* 66. Stems wide-climbing. Branches and branchlets flexuose, glabrous. Leaves not produced at the base into a pungent spur. Cladodia solitary, ovate, acute, subcoriaceous, ¾–1½ in. long. Flowers usually in pairs from the axils of the leaves; pedicels ⅓–½ in. long, articulated above the middle. Perianth $\frac{1}{6}$–⅕ in. long; segments spreading from the middle. Anthers minute, ovules 5–6 in a cell. Berry globose, $\frac{1}{6}$–¼ in. long.—Baker in Journ. Linn. Soc. xiv. 627, and in Fl. Cap. vi. 272. *Dracæna medeoloides*,

Linn. f. Suppl. 203. *Myrsiphyllum asparagoides*, Willd. in Ges. Naturf. Fr. Berl. Mag. ii. 1808, 25; Kunth, Enum. v. 105; Hook. in Bot. Mag. t. 5584.

Nile Land. British East Africa: Plateau of the Kikuyu escarpment, near Kedong, *Gregory*.

No specimen from Tropical Africa at Kew.

A common South African plant.

3. **DRACÆNA**, Linn.; Benth. et Hook. f. Gen. Pl. iii. 779.

Perianth-tube cylindrical; segments of the limb narrow, equal, spreading. Stamens 6, inserted at the throat of the perianth-tube; filaments filiform; anthers oblong, dorsifixed, versatile. Ovary ovoid, sessile, 3-celled; ovules solitary, basal, erect; style long, filiform; stigma capitate. Fruit globose, baccate. Seeds 1–3, globose or angled by pressure; testa thick, sometimes pulpy; albumen horny; embryo small.—Shrubs, with woody stems. Leaves sessile or petiolate, ensiform or oblong, sometimes blotched with white. Inflorescence racemose, often panicled; pedicels articulated at the middle, usually fascicled. Flowers small, white or yellowish.

Species 50, spread through the warmer regions of the Old World.

Leaves sessile, ensiform, crowded.
  Leaves thick and rigid.
    Perianth $\frac{1}{6}$ in. long . . . . . 1. *D. schizantha.*
    Perianth $\frac{1}{4}$ in. long . . . . . 2. *D. Ombet.*
    Perianth $\frac{1}{2}$ in. long . . . . . 3. *D. Hanningtoni.*
  Leaves thin.
    Perianth $\frac{1}{2}$ in. long . . . . . 4. *D. Mannii.*
    Perianth 1 in. long . . . . . 5. *D. Perrottetii.*
Leaves sessile, lanceolate, crowded . . . . 6. *D. acutissima.*
Leaves sessile, oblanceolate, crowded.
  Racemes cylindrical.
    Perianth $\frac{1}{2}$–$\frac{3}{4}$ in. long . . . . . 7. *D. arborea.*
    Perianth $1\frac{1}{2}$–2 in. long . . . . . 8. *D. Preussii.*
  Racemes congested, globose.
    Flowers small.
      A tall tree . . . . . 9. *D. Papahu.*
      Low trees.
        Perianth $\frac{1}{3}$ in. long . . . . . 10. *D. parviflora.*
        Perianth $\frac{1}{2}$–$\frac{3}{4}$ in. long.
          Pedicels very short . . . . . 11. *D. Smithii.*
          Pedicels $\frac{1}{12}$–$\frac{1}{8}$ in. long.
            Perianth yellowish . . . . 12. *D. fragrans.*
            Perianth tinged with red . . . 13. *D. Steudneri.*
    Flowers large . . . . . 14. *D. Fischeri.*
Leaves sessile, linear, laxly disposed . . . . 15. *D. reflexa.*
Leaves subsessile, lanceolate, laxly disposed . . . 16. *D. Braunii.*
Leaves sessile, lanceolate, rosulate . . . . 17. *D. cerasifera.*
Leaves subsessile, oblong or oblanceolate-oblong, 2–3-nate on a slender stem with long internodes.
  Leaves oblanceolate-oblong . . . . . 18. *D. camerooniana.*
  Leaves oblong.
    Pedicels short.

Leaves $1\frac{1}{2}$–2 in. broad . . . . . 19. *D. silvatica.*
Leaves 2–$2\frac{1}{2}$ in. broad.
Pedicels distinct . . . . . 20. *D. interrupta.*
Pedicels nearly obsolete . . . . 21. *D. mayumbensis.*
Leaves 2–$3\frac{1}{2}$ in. broad . . . . . 22. *D. congoensis.*
Pedicels $\frac{1}{4}$–$\frac{1}{2}$ in. long.
Berry $\frac{1}{8}$–$\frac{1}{2}$ in. diam. . . . . 23. *D. surculosa.*
Berry $\frac{1}{2}$–$\frac{3}{4}$ in. diam. . . . . 24. *D. godseffiana.*
Leaves distinctly petiolate, lanceolate, or oblong-lanceolate.
Leaves lanceolate.
Acaulescent. Inflorescence panicled . . . 25. *D. acaulis.*
Caulescent. Inflorescence spicate . . . . 26. *D. Poggei.*
Leaves oblong-lanceolate.
Acaulescent . . . . . 27. *D. humilis.*
Caulescent.
Lower pedicels 2–3 in a cluster . . . . 28. *D. thalioides.*
Lower pedicels 5–6 in a cluster . . . . 29. *D. tholloniana.*
Leaves distinctly petiolate, oblong. Inflorescence usually panicled.
Inflorescence of 3–4 heads on a simple axis . . 30. *D. ugandensis.*
Inflorescence panicled.
Petiole short.
Pedicels short . . . . . 31. *D. gabonica.*
Pedicels $\frac{1}{3}$–$\frac{1}{2}$ in. long.
Pedicels always solitary . . . . 32. *D. elegans.*
Lower pedicels not solitary.
Perianth-segments as long as the tube . 33. *D. elliptica.*
Perianth-segments twice as long as the tube 34. *D. laxissima.*
Petiole long.
Blade cuneate at the base.
Petiole 4–5 in. long . . . . . 35. *D. glomerata.*
Petiole 6–8 in. long . . . . . 36. *D. Büttneri.*
Blade rounded at the base . . . . 37. *D. densifolia.*
Leaves distinctly petiolate, lanceolate or oblong. Inflorescence capitate.
Acaulescent or subacaulescent.
Blade narrowed to the base . . . . 38. *D. monostachya.*
Blade rounded to the base.
Blade less than half as broad as long . . 39. *D. phrynioides.*
Blade more than half as broad as long . . 40. *D. phanerophlebia.*
Caulescent.
Blade less than half as broad as long.
Perianth $\frac{1}{2}$ in. long . . . . . 41. *D. Afzelii.*
Perianth $\frac{3}{4}$–1 in. long.
Perianth-segments half as long as the tube . 42. *D. cylindrica.*
Perianth-segments as long as the tube . . 43. *D. bicolor.*
Blade half as broad as long.
Stems short.
Perianth-segments half as long as the tube . 44. *D. Eiliotii.*
Perianth-segments nearly as long as the tube . 45. *D. goldieana.*
Perianth-segments as long as the tube . . 46. *D. ovata.*
Stems 3–5 ft. long . . . . . 47. *D. Lecomtei.*

1. **D. schizantha,** *Baker in Journ. Bot.* 1877, 71. A tree 20–30 ft. high, with a thick forked trunk. Leaves crowded, rigid,

ensiform. Panicle ample, tripinnate; branches stiff, stout, pubescent, spreading horizontally; pedicels clustered, pubescent, $\frac{1}{12}$ in. long, articulated at the middle; bracts minute, ovate. Perianth $\frac{1}{6}$ in. long; tube very short. Stamens shorter than the perianth; filaments flattened.—Hildeb. in Monatsschr. Ver. Gartenb. K. preuss. Staaten, 1878, 196.

Nile Land. British Somaliland: Mountains, near Maid, 2500–5500 ft., *Hildebrandt*, 1472!

Native name *Moli*.

I have not seen the leaves of Hildebrandt's plant, but those of one gathered in the Golis range in 1895, by Mrs. E. Lort-Phillips, are not distinguishable from those of *D. Ombet*. This and the two next are nearly allied to the Canarian *D. Draco*, and Socotran *D. Cinnabari*, Balf. f.

2. **D. Ombet,** *Kotschy & Peyr. Pl. Tinn.* 47, *with figure*. Trunk 7–8 ft. long, twice forked; branchlets short, thick, spreading. Leaves densely rosulate, ensiform from a dilated base, $1\frac{1}{2}$–2 ft. long, under 1 in. broad low down, narrowed gradually to the tip, very thick and rigid, smooth on the margin, rounded on the back in the lower half, keeled upwards, triquetrous towards the apex. Panicle shortly peduncled, very compound, above 1 ft. long; branchlets glabrous; pedicels many in a cluster, $\frac{1}{8}$–$\frac{1}{6}$ in. long, articulated at the middle; bracts ovate-lanceolate, minute. Perianth $\frac{1}{4}$ in. long; tube nearly obsolete. Stamens shorter than the perianth.—Schweinf. in Bull. Herb. Boiss. ii. App. ii. 76; Baker in Hook. Ic. t. 2539.

Nile Land. Nubia: on Mount Erkowit, near Suakin, 5000 ft., *Schweinfurth*, 250! Anguab Mountains, west of Suakin, 2500–4000 ft., *Heuglin!* Eritrea: Mount Adhamed, near Geleb, 6800 ft., *Schweinfurth*, 1187, 1413. Mount Alamkale, near Aidereso, 5800 ft., *Schweinfurth*, 1464, 1821.

3. **D. Hanningtoni,** *Baker*. Nearly allied to *D. Ombet*. Branchlets of the panicle glabrous; pedicels densely clustered $\frac{1}{12}$–$\frac{1}{8}$ in. long. Perianth cylindrical, $\frac{1}{2}$ in. long; tube half as long as the segments. Stamens as long as the perianth. Style distinctly exserted.

Mozamb. Dist. German East Africa: Unyamwezi; Msalala, *Hannington!*

4. **D. Mannii,** *Baker in Journ. Bot.* 1874, 164. Trunk woody, 30 ft. long. Leaves crowded, ascending, ensiform, sessile, firm in texture, 1–$1\frac{1}{2}$ ft. long, $\frac{3}{4}$–1 in. broad at the middle, narrowed gradually to $\frac{1}{4}$ in. above the base; midrib not visible in the upper third. Panicle nearly sessile, bipinnate, $1\frac{1}{2}$ ft. long; branches long, ascending; racemes moderately dense, the end one $\frac{1}{2}$ ft. long; pedicels short, articulated at the apex, the lower 3–6 in a cluster; bracts minute, ovate. Perianth greenish, $\frac{1}{2}$ in. long; segments twice as long as the tube. Stamens as long as the perianth-segments. Style finally exserted.—Baker in Journ. Linn. Soc. xiv. 526.

Upper Guinea. Old Calabar River, *Mann*, 2329! *Thomson*, 8!

Imperfect specimens of an allied plant are described by Hua in Contr. Fl. Cong. Franç. Lil. 7, from Osika, in the Bateke country, French Congo, collected by De Brazza (No. 185) in 1883. It differs from *D. Mannii* by its longer pedicels.

5. **D. Perrottetii,** *Baker in Journ. Bot.* 1874, 165. Trunk woody, 12 ft. long; branchlets slender, glabrous. Leaves ensiform, sessile,

thin, moderately firm, 6–12 in. long, ¾–1 in. broad above the middle, narrowed gradually to the base; midrib not visible in the upper third. Panicle shortly peduncled, deltoid, sometimes 1 ft. long; branches spreading, laxly racemose; pedicels ⅙ in. long, articulated at the apex, the lower clustered; bracts small, ovate. Perianth white, 1 in. long; segments twice as long as the tube. Stamens as long as the perianth-segments. Style exserted.—Baker in Journ. Linn. Soc. xiv. 528.

Upper Guinea. Senegal, *Perrottet*, 785! Lagos, *Moloney*, 2! Niger Territory: Nupe, *Barter*, 1511!

Var. *minor*, Baker in. Journ. Linn. Soc. xiv. 529. Leaves much smaller. Racemes simple.

Upper Guinea. Senegambia: River Nunez, *Heudelot!*

6. **D. acutissima,** *Hua, Contr. Fl. Congo Franç. Lil.* 17. Leaves not very crowded, erect, sessile, linear, 1 ft. long, ⅛ in. broad, very acute, sub-rigid; midrib distinct on both surfaces; underside showing 12–15 distinct raised vertical veins. Raceme lax, simple, terminal, shorter than the leaves; rhachis pubescent; bracts obsolete; flowers many in a cluster; pedicels ⅛ in. long, articulated at the base. Buds clavate, much constricted at the middle. Perianth-tube cylindrical, longer than the lobes.

Lower Guinea. French Congo: region of the River Alima, a tributary of the Lower Congo, *Thollon*, 913!

No specimen at Kew.

7. **D. arborea,** *Link, Enum. Hort. Berol.* i. 341. Trunk arborescent, reaching a height of 40 ft. Leaves dense, sessile, lanceolate, thin, moderately firm, 2–3 ft. long, 2–3 in. broad at the middle, narrowed to under 1 in. above the dilated base; midrib visible nearly to the apex. Inflorescence an ample deltoid panicle 1½ ft. long and broad; lower branch bracts large, lanceolate; racemes dense, cylindrical, 3–6 in. long; flowers 3–4 in a cluster; pedicels ¼–⅓ in. long; bracts ovate, scariose. Perianth ½–¾ in. long; tube short, campanulate. Stamens not exserted. Berry the size of a cherry.—Kunth, Enum. v. 9; Regel Revis. Drac. 36; Baker in Journ. Linn. Soc. xiv. 528. *D. knerkiana*, K. Koch, Wochenschr. iv. 394, x. 235. *Aletris arborea*, Willd. Enum. 381.

Upper Guinea. Ashanti: Fumassi, *Cummins*, 16F! Niger Delta: banks of the River Nun, *Mann*, 454!

Lower Guinea. Island of St. Thomas, ascending to 3000 ft., *Moller & Quintas*, 13! 107! Angola, *Welwitsch*, 3737! French Congo; lagoon of Mayumba, *Lecomte*, 107.

8. **D. Preussii,** *Engl. Jahrb.* xv. 477. Stem 16–20 ft. long. Leaves crowded, sessile, lanceolate, 2–3 ft. long, 3 in. broad at the middle, narrowed to 2 in. above the dilated base; midrib stout, prominent on the under surface. Inflorescence dense, subcylindrical; branches and branchlets short, many-flowered; bracts lanceolate, nearly 1 in. long, purplish upwards. Perianth-tube nearly 1 in. long; segments ¾ the length of the tube. Stamens as long as the perianth-segments.

Upper Guinea. Cameroons, near Barombi, *Preuss*, 328.

No specimen at Kew.

9. **D. Papahu,** *Engl. Pfl. Ost-Afr. C.* 143. A tree 60 ft. high. Leaves sessile, lanceolate, almost membranous, 2 ft. or more long, 4 in. broad at the middle, narrowed gradually to $1\frac{1}{2}$–2 in. above the base; midrib not visible in the upper third. Panicle tripinnate; flowers many to a cluster. Perianth-segments as long as the tube. Filaments scarcely as long as the anthers. Berry above $\frac{1}{2}$ in. diam.

Mozamb. Dist. German East Africa: Usambara; Lutindi, *Holst,* 3260!

10. **D. parviflora,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 252. Trunk forked, 20–35 ft. long. Leaves crowded, sessile, lanceolate, subcoriaceous, 3–4 ft. long, 3 in. broad at the middle, narrowed to 1 in. above the dilated base; midrib visible nearly to the apex. Panicle 1 ft. or more long; flowers densely congested at the apex of the branchlets; bracts minute, ovate; pedicels $\frac{1}{6}$ in. long. Perianth whitish, $\frac{1}{3}$ in. long; tube as long as the segments. Style exserted.

Lower Guinea. Angola: Golungo Alto; in elevated woods by the side of streams, *Welwitsch,* 3239!

Native name *Calunga.*

11. **D. Smithii,** *Baker ex Hook. f. in Bot. Mag. t.* 6169. Trunk slender, 15 ft. long. Leaves crowded, lanceolate, sessile, 3-4 ft. long, $2\frac{1}{2}$–$3\frac{1}{2}$ in. broad at the middle, narrowed to 1 in. above the dilated base; midrib not visible in the upper third. Panicle much shorter than the leaves; clusters of flowers dense, globose, $1\frac{1}{4}$–$1\frac{1}{2}$ in. diam., both terminal and lateral on the branchlets, the lowest lateral sessile or shortly peduncled; pedicels very short, articulated at the middle. Perianth pale yellow, $\frac{1}{2}$ in. long; tube cylindrical, as long as the segments. Stamens as long as the perianth-segments.

West Tropical Africa (?) Cultivated specimen!

Described from a plant that flowered at Kew in 1875, received from the Duke of Northumberland. Sir J. D. Hooker thinks it was sent by Whitfield from Upper Guinea.

12. **D. fragrans,** *Gawl. in Bot. Mag. t.* 1081. Trunk arborescent, reaching a height of 20 ft. and more. Leaves crowded, sessile, lanceolate, thin, green, shining, 2–3 ft. long, 3–4 in. broad at the middle, narrowed to 1 in. or less above the dilated base; midrib visible nearly to the apex. Panicle deltoid, shortly peduncled, 1 ft. or more long; flowers densely congested at the end of the branchlets; pedicels $\frac{1}{12}$–$\frac{1}{8}$ in. long, articulated at the apex; bracts small, ovate, white, scariose. Perianth yellowish, $\frac{1}{2}$–$\frac{3}{4}$ in. long, fragrant; segments as long as the tube. Stamens as long as the perianth-segments. Style exserted. Berry orange-red, the size of a cherry.—Schultes f. Syst. Veg. vii. 342; Kunth, Enum. v. 9; Regel, Revis. Drac. 37; A. Rich. Tent. Fl. Abyss. ii. 321; Baker in Journ. Linn. Soc. xiv. 529. *Aletris fragrans,* Linn. Sp. Plant. ed. ii. 456; Andr. Bot. Rep. t. 306; Red. Lil. t. 117. *Sansevieria fragrans,* Jacq. Fragm. t. 2, fig. 6, t. 33, fig. 1.

Upper Guinea. Without locality, cultivated specimen, *Mann!* Sierra Leone, *Afzelius!*

Nile Land. Abyssinia: Shoa, *Quartin-Dillon!* British East Africa: Uganda, *Scott-Elliot*, 7439! Ruwenzori, 6000 ft., *Scott-Elliot*, 7829!

Lower Guinea. Angola: Pungo Andongo, *Welwitsch*, 3738!

Mozamb. Dist. British Central Africa: Nyasaland; Mount Chiradzulu, *Meller!* Zomba, *Whyte*, 87! and without precise locality, *Buchanan*, 25!

D. Lindeni, Ill. Hort. xxvii. t. 384, is a form of this species, having the leaves variegated with white.

13. **D. Steudneri,** *Engl. Pfl. Ost-Afr. C.* 143. Arborescent. Leaves large, lanceolate. Inflorescence an ample panicle with spreading branches; flowers densely clustered; bracts ovate; pedicels $\frac{1}{8}$ in. long. Perianth more than $\frac{1}{2}$ in. long; tube constricted above the ovary; segments linear-oblong, tinged with red on the keel outside. Filaments filiform; anthers oblong. Berry $\frac{1}{3}$–$\frac{1}{2}$ in. diam.

Nile Land. Abyssinia: Dembea; near Gondar, *Steudner*, 477.

Var. *kilimandscharica*, Engl. loc. cit. Leaves more narrowed below the middle, $1\frac{1}{2}$ ft. long, 2 in. broad. Perianth-segments as long as the tube.

Mozamb. Dist. German East Africa: Kilimanjaro; abundant 4500–9000 ft., used by the natives for hedges, *Johnston*, 176! at Marangu, 4900 ft., *Volkens*, 1416!

14. **D. Fischeri,** *Baker in Engl. Jahrb.* xv. 477. Leaves not seen. Flowers congested at the tip of the branchlets in large globose heads; clusters subtended by orbicular scariose bracts $1\frac{1}{2}$–2 in. long and broad; pedicels short. Perianth cylindrical, nearly 3 in. long; segments short. Stamens inserted above the middle of the perianth-tube.

Mozamb. Dist. German East Africa: Unyamwezi; Usuri, *Fischer*, 589!
No specimen in the Kew Herbarium.

15. **D. reflexa,** *Lam. Encyc.* ii. 324, *var.* **nitens,** *Baker.* Trunk 7–10 ft. long. Leaves laxly disposed, sessile, linear, moderately firm, bright green, 6–10 in. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad at the middle, slightly narrowed to the base; midrib visible nearly to the apex. Panicle shortly peduncled, $\frac{1}{2}$–1 ft. long; branches short, spreading, simple; pedicels $\frac{1}{8}$–$\frac{1}{6}$ in. long, the lower 2–3 in a cluster; bracts ovate, minute, scariose. Perianth cylindrical, white tinged with red outside, $\frac{1}{2}$–$\frac{3}{4}$ in. long; tube cylindrical. Stamens as long as the perianth-segments, Style exserted. Berry $\frac{1}{2}$ in. diam.—*D. nitens*, Welw. ex Baker in Trans. Linn. Soc. ser. 2, Bot. i. 252.

Nile Land. British East Africa: Ruwenzori; Yeria Valley, 8000 ft., *Scott-Elliot*, 7899! Butagu Valley, 8000 ft., *Scott-Elliot*, 8009!

Lower Guinea. Angola; Golungo Alto and Pungo Andongo, *Welwitsch*, 3741! 3742! 3743!

Mozamb. Dist. Portuguese East Africa: Morambala Mountain, near the River Shire, 500–2000 ft., *Kirk!*

16. **D. Braunii,** *Engl. Jahrb.* xv. 479, *t.* 20. Rootstock nearly 1 ft. long, branched. Sterile stem simple, erect, slender, 4–6 in. long. Leaves laxly disposed, sessile, lanceolate, 2–3 in. long, under 1 in. broad, narrowed to a clasping channelled base. Fertile stem very short, with

only a single pair of similar leaves. Spike simple, short, lax, with a short erect peduncle; lower flowers 3–4 in a cluster. Perianth nearly 1 in. long; segments twice as long as the cylindrical tube. Stamens rather shorter than the perianth-segments.—Hua in Contr. Fl. Congo Franç. Lil. 11.

Upper Guinea. Cameroons: Malimba, *Braun.*

Lower Guinea. Gaboon: Cape St. Clara, *Leroy.*

Flowered at the Berlin Botanic Garden, August 1891. No specimen at Kew.

D. sanderiana, Sander ex Masters in Gard. Chron. 1893, xiii. 442 and 445, fig. 65, is like *D. Braunii* in habit, but the leaves are 6–7 in. long by $1\frac{1}{2}$ in. broad, and longitudinally variegated with white. It was introduced from the Cameroons into the Berlin Botanic Garden by *J. Braun* in 1888.—Gard. Chron. 1893, xiii. 576 and 634; Journ. Hort. ser. xxvi. 3, 389; Rev. Hort. Belg. 1893, 139; Bull. Soc. Tosc. Ort. 1897, 176, t. 8.

17. **D. cerasifera,** *Hua, Contr. Fl. Congo Franç. Lil.* 11. Leaves few, forming a rosette at the tip of the branches, lanceolate, acute, reaching a length of 7–8 in., $1\frac{1}{2}$ in. broad at the middle, narrowed to the base, distinctly costate to the apex. Panicle lax, pendulous, 2 ft. long; rhachis slender; lower branch-bracts foliaceous; upper deltoid, apiculate; pedicels slender, nearly 1 in. long, articulated at the apex, often geminate. Perianth 1 in. long; segments twice the length of the tube, subspathulate. Stamens nearly as long as the perianth-lobes. Berry globose, $\frac{1}{2}$ in. diam., resembling a cherry, usually 1-seeded.

Lower Guinea. French Congo: Ogowe River, *Leroy !*

No specimen at Kew.

18. **D. camerooniana,** *Baker in Journ. Bot.* 1874, 166. A much-branched shrub, reaching a height of 15 ft. Branchlets slender, woody, with long internodes. Leaves 2–4-nate. nearly sessile, oblanceolate-oblong, 4–8 in. long, $1\frac{1}{2}$–2 in. broad at the middle, moderately firm in texture, acute, narrowed to the base; midrib visible only on the underside near the base. Inflorescence a short lax simple raceme with a short peduncle; flowers few in the lateral clusters, many in the end one; pedicels very short; bracts minute, ovate. Perianth $\frac{3}{4}$–1 in. long; segments shorter than the cylindrical tube. Stamens rather shorter than the perianth-segments. Style finally exserted. Berry usually 1-seeded, $\frac{1}{3}$–$\frac{1}{2}$ in. diam.—Baker in Journ. Linn. Soc. xiv. 538.

Upper Guinea. Sierra Leone: Talla Hills, at Lumbaraya, *Scott-Elliot*, 5009! River Scarcies, at Bayabaya, *Scott-Elliot*, 4551! Gold Coast, *Burton & Cameron!* Cameroons: Barombi, *Preuss*, 146! Cameroon Mountain at 3500 ft., *Mann*, 1204!

Lower Guinea. Gaboon: Munda; Sibange Farm, *Soyaux*, 61!

19. **D. silvatica,** *Hua, Contr. Fl. Congo Franç. Lil.* 13. Allied to *D. surculosa.* Stems tufted, slender, scarcely 1 ft. long. Leaves oblong, acuminate, 4–5 in. long, $1\frac{1}{2}$–2 in. broad; midrib distinct only near the base; petiole very short, channelled, amplexicaul. Raceme simple,

2–3 in. long; pedicels $\frac{1}{12}$ in. long, articulated at the middle. Flowers unknown. Fruit globose, the size of a small pea.

Lower Guinea. French Congo; woods at Brazzaville, on Stanley Pool, *Thollon*, 4074!

No specimen at Kew.

20. **D. interrupta,** *Baker in Trans. Linn. Soc. ser. 2, Bot.* i. 252. A much-branched low shrub. Branchlets slender, with long internodes. Leaves 4-nate, nearly sessile, oblong, acute, firm in texture, 4–6 in. long, 2–2½ in. broad at the middle, cuneate at the base, unspotted; midrib visible only on the underside near the base. Inflorescence a lax raceme with a moderately long cernuous peduncle; flowers many in a cluster; pedicels short; bracts minute, ovate. Perianth ¾–1 in. long; segments half as long as the cylindrical tube. Stamens as long as the perianth-segments. Style finally exserted.

Lower Guinea. Angola: Pungo Andongo; in woods by the River Tombe, *Welwitsch*, 3748!

21. **D. mayumbensis,** *Hua, Contr. Fl. Congo Franç. Lil.* 14. Allied to *D. cameroniana*. Leaves 2–5 in a rosette at the apex of the branches, oblong, acuminate, narrowed to the base to a very short petiole, the outer 6–7 in. long, 2–2½ in. broad, the inner much smaller; midrib distinct in the lower half. Raceme subspicate, simple, terminal, erect; bracts short, remote; flowers 3–10 in a cluster, nearly sessile. Perianth-tube cylindrical, as long as the linear segments.

Lower Guinea. Southern French Congo; forest of Mayumba, *Thollon*, 1222!

No specimen at Kew.

22. **D. congoensis,** *Hua, Contr. Fl. Congo Franç. Lil.* 16. Near *D. surculosa*. Leaves crowded at the tip of the branches, elliptical, very acuminate, 4–8 in. long, 2–3½ in. broad, rounded at the base; petiole 2–3 in. long, dilated at the base; midrib distinct in the lower half. Flowers in a lax peduncled subspicate raceme; clusters 5–6, consisting of 15–40 flowers each; bracts ventricose, caudate. Perianth 1 in. or rather less long; tube cylindrical, much longer than the segments.

Lower Guinea. Southern French Congo; forest of Mayumba, *Thollon!*

No specimen at Kew.

23. **D. surculosa,** *Lindl. in Bot. Reg. t.* 1169. A much-branched shrub 6–10 ft. high. Branchlets slender, woody, with long internodes. Leaves 2–4-nate, nearly sessile, oblong, acute, 3–6 in. long, 1½–2 in. broad at the middle, moderately firm in texture, often spotted with white; midrib distinct from base to apex. Flowers many in a terminal umbel or short raceme, with a short slender peduncle; pedicels ⅓–½ in. long, articulated below the middle. Perianth white, ¾ in. long; segments shorter than the slender cylindrical tube. Stamens as long as the perianth-segments. Style much exserted. Berry bright red, 1–2-seeded, ⅓–½ in. diam.—Roem. & Schult. Syst. Veg. vii. 1677; Kunth, Enum. v. 14; Hook. Bot. Mag. t. 5662 (var. *maculata*); Regel, Revis. Dracæn. 43; Baker in Journ. Linn. Soc. xiv. 537.

Upper Guinea. Sierra Leone: Ninia, *Scott-Elliot*, 4815! and without precise locality, *Afzelius! Don!* Ashanti: Assin-Yan-Coomassie, *Cummins*, 226! Niger Delta: Angiama, *Barter*, 2095! Old Calabar River, *Mann*, 2327!

Introduced into cultivation at Chiswick by *G. Don* in 1821. The leaf is narrower in proportion to its length than in *D. godseffiana*, and in the variegated forms the spots are fewer and pale green, not white, and the scariose rudimentary leaves of the lower part of the stem are larger and more persistent.

24. **D. godseffiana,** *Hort. Sander ex Baker in Gard. Chron.* 1894, xvi. 212. Stem slender, erect, terete, green, much-branched. Leaves 2–3-nate, subsessile, oblong, 4–5 in. long, 2 in. broad at the middle, dark green, usually variegated with copious small white spots; midrib conspicuous from the base to the apex. Raceme lax, oblong, 2–3 in. long; bracts minute, lanceolate, flowers in a terminal and several lateral fascicles; pedicels $\frac{1}{4}$ in. long. Perianth greenish-white, $\frac{3}{4}$ in. long; segments linear, as long as the tube. Stamens as long as the perianth-segments. Style exserted. Berry globose, bright red, $\frac{1}{2}$–$\frac{3}{4}$ in. diam.—Garden, 1896, ii. 276 (with figure); Hook. f. in Bot. Mag. t. 7584.

Upper Guinea. Lagos, cultivated specimen, *Millen!*

Introduced into cultivation about 1892, and distributed by Messrs. Sander of St. Albans.

25. **D. acaulis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 252. Acaulescent. Leaves concentrated in a radical rosette, ascending, lanceolate, 1–3 ft. long, $1\frac{1}{2}$–2 in. broad at the middle, narrowed gradually to the tip and a long channelled petiole; midrib conspicuous on the under side except towards the tip. Panicle 4–5 ft. long, with many flexuose racemose branches; lower branch-bracts lanceolate, $\frac{1}{2}$ ft. long, and raceme 6–8 in. long; lower pedicels very short, 3–4 in a cluster. Perianth cylindrical, 14–15 lin. long; segments rather longer than the tube. Stamens as long as the perianth-segments. Style exserted.

Lower Guinea. Angola: Golungo Alto, 1000–2400 ft., *Welwitsch*, 3752! 3753!

26. **D. Poggei,** *Engl. Jahrb.* xv. 478. Trunk slender. Leaves laxly disposed, with a slender petiole 3–4 in. long and a firm lanceolate-acuminate blade, 1 ft. long, 1–$1\frac{1}{4}$ in. broad at the middle, rather rounded at the base; midrib visible only on the lower side in the lower half. Inflorescence spicate, about 3 in. long; lower bracts lanceolate, acuminate, $1\frac{1}{2}$–2 in. long. Perianth cylindrical, 2 in. long; tube twice as long as the linear segments. Filaments filiform, as long as the perianth-segments. Berry 2–3-seeded, 2–3-lobed.

South Central. Congo Free State: by the Lomami River, *Pogge*, 1434. Lunda: by the Lulua River, *Pogge*, 1456!

27. **D. humilis,** *Baker in Journ. Bot.* 1874, 166. Acaulescent. Leaves few, aggregated in a basal rosette; petiole long, slender, erect, dilated at the base; blade firm, oblong-lanceolate, acute, 9–12 in. long, 2–$2\frac{1}{2}$ in. broad, with a distinct midrib only in the lower part. Flowers in a short simple shortly peduncled erect spike, the lower 2–3 in a

cluster; bracts minute, ovate, scariose. Perianth ½ in. long; segments as long as the tube. Stamens as long as the perianth-segments. Berry 1–3-lobed, if simple not larger than a pea.—Baker in Journ. Linn. Soc. xiv. 534. *D. aubryana*, Hua in Contr. Fl. Congo Franç. Lil. 8, ex parte.

Upper Guinea. Sierra Leone: banks of the Bagru River, *Mann*, 898!

Lower Guinea. Gaboon: Munda; Sibange Farm, in damp woods, *Soyaux*, 96!

28. **D. thalioides,** *C. Morren in Belg. Hort.* 1860, 348, *with figure.* Stem short, slender, simple. Leaves crowded, ascending; petiole long, slender, dilated and clasping the stem at the base; blade oblong-lanceolate or lanceolate, acuminate, ½–1 ft. long, 1–3 in. broad at the middle, deltoid at the base; midrib not visible on the under side in the upper half. Inflorescence long, lax, spicate, simple or slightly branched; lower flowers 2–3 in a cluster. Perianth whitish, 1–1¼ in. long; segments oblong, very short. Anthers oblong, as long as the filiform filaments. Style exserted. Berry usually 1-seeded, oblong.—Regel, Revis. Drac. 47; Baker in Journ. Linn. Soc. xiv. 534. *D. aubryana*, A. Brong. in Flore des Serres, tt. 1522–3; K. Koch, Wochenschr. x. 239.

Upper Guinea. Cameroons: Batanga, *Mann*, 1038!

Lower Guinea. Gaboon: banks of the Gaboon River, *Mann*, 1036! and without precise locality, *Griffon du Bellay*, 187.

Introduced into cultivation about 1860 by M. Aubry Le Comte, commissioner of the French Imperial Marine.

29. **D. tholloniana,** *Hua, Contr. Fl. Congo Franç. Lil.* 10. An erect shrub. Leaves 5–6 to a stem; petiole nearly as long as the blade, channelled, dilated at the base; blade oblong-lanceolate, 12-16 in. long, 2½–3½ in. broad, abruptly narrowed at the base; midrib not produced to the apex. Raceme simple, shortly peduncled; bracts minute; pedicels 5–6 in a cluster, very short. Perianth 4 lin. long; tube short; lobes linear. Stamen rather shorter than the perianth-lobes; filaments twice the length of the anthers. Style scarcely exserted.

Lower Guinea. French Congo; Njole, on the lower Ogowe, *Thollon*, 31.

No specimen at Kew.

30. **D. ugandensis,** *Baker.* Branchlets woody, ¼ in. diam.; scars of fallen leaves ¼ in. apart. Leaves with a distinct channelled petiole about 1 in. long, dilated at the base; blade firm, oblong, subobtuse, 3–4 in. long, 18–21 lin. broad, narrowed to the base. Raceme shorter than the leaves, consisting of 3–4 clusters of flowers, 10–12 in each; pedicels ¼ in. long, articulated at the middle. Perianth not seen. Berry globose, the size of a pea.

Nile Land. Uganda: common in hedges, *Scott-Elliot*, 7264!

31. **D. gabonica,** *Hua, Contr. Fl. Congo Franç. Lil.* 17. Stem slender, woody. Leaves crowded, ascending; petiole channelled, 2–4 in. long, dilated at the base; blade thin, oblong-cuspidate, unspotted,

4–5 in. long, 2½–3 in. broad at the middle, with a deltoid base and midrib visible beneath only near the base. Raceme simple, lax, shortly peduncled; flowers few in a fascicle; pedicels short; bracts minute. Perianth ¾–⅞ in. long; segments as long as the cylindrical tube. Stamens rather shorter than the perianth-segments. Style not exserted.

Lower Guinea. Gaboon: Munda; Sibange Farm, in damp woods, *Soyaux*, 98! and without precise locality, *Klaine*, 104!

Nearly allied to *D. elliptica*, Thunb.

32. **D. elegans,** *Hua, Contr. Fl. Congo Franç. Lil.* 13. Nearly allied to *D. elliptica*. An erect shrub, with slender branches. Leaves laxly disposed; petiole short, channelled, clasping the stem all round; blade elliptical, 5–6 in. long, 2 in. broad at the middle, with midrib distinct from the base to the acuminate apex. Panicle slender, pendulous; branch bracts all short; racemes lax, sometimes forked; pedicels always solitary, above ½ in. long. Perianth ½ in. long; tube short, cylindrical; lobes linear. Stamens not exserted. Ovary oblong.

Lower Guinea. French Congo; Sanja, on the River Ogowe, *Leroy!*

No specimen at Kew.

33. **D. elliptica,** *Thunb. & Dalm. Diss. Dracæn.* 6. A shrub, with much-branched slender woody stems. Leaves with a very short channelled petiole and an oblong acute blade 5–6 in. long, 1½–2 in. broad at the middle, cuneate or slightly rounded at the base; midrib visible to the apex on the under surface. Flowers in small shortly peduncled panicles; branches racemose; pedicels long, slender, articulated at the middle; bracts minute, ovate. Perianth ½ in. long; segments as long as the tube. Berry 3-lobed, 3-seeded, ½ in. diam.

Nile Land. British East Africa: Toru; Wimi Valley, *Scott-Elliot*, 7988!

Lower Guinea. Island of St. Thomas, *Quintas*, 1!

Mozamb. Dist. British Central Africa: Nyasaland; Mount Zomba and Mount Malosa, 4000–6000 ft., *Whyte!* and without precise locality, *Buchanan*, 1485!

Also in Tropical Asia.

34. **D. laxissima,** *Engl. Jahrb.* xv. 478. Leaves laxly disposed, shortly petiolate, oblong, acute, 6 in. long, 2 in. broad at the middle, narrowed to the base; side veins nearly as conspicuous as the midrib. Inflorescence panicled, very lax, 1 ft. long; branches slender; pedicels ⅓–½ in. long; bracts minute, ovate, scariose. Buds clavate, about 1 in. long. Perianth-segments twice as long as the funnel-shaped tube. Filaments filiform.

South Central. Lunda: Bashilange; near Mukenge, *Pogge*, 1462.

No specimen at Kew.

35. **D. glomerata,** *Baker in Journ. Bot.* 1874, 166. Stem slender, simple, 8 ft. long. Leaves moderately dense, ascending; petiole winged, reaching a length of 4–5 in. in the lower leaves; blade oblong, cuspidate, of moderately firm texture, 4–8 in. long, 2½–3 in. broad at the middle, deltoid at the base, with a distinct midrib in the lower half. In-

florescence a subsessile panicle 1 ft. long, with a flexuose rhachis and several short spreading simple branches; flowers in dense clusters at the tip and side of the branches; pedicels very short; bracts minute. Perianth $\frac{1}{2}$ in. long; segments $\frac{1}{3}$ the length of the very slender tube. Anthers shorter than the filiform filaments.—Baker in Journ. Linn. Soc. xiv. 536.

Lower Guinea. Corisco Bay: Eloby Island, *Mann*, 1630!

36. **D. Buttneri,** *Engl. Jahrb.* xv. 479. Leaves moderately dense; petiole slender, 6–8 in. long; blade oblong, acute or acuminate, 4–6 in. long, cuneate at the base. Inflorescence 8 in. long; secondary branches short, distant; flowers clustered; pedicels short; bracts lanceolate, scariose. Perianth not seen. Berry globose, 1-seeded.

Lower Guinea. Gaboon: Munda; Sibange Farm, *Büttner*, 537.

No specimen at Kew.

37. **D. densifolia,** *Baker in Journ. Bot.* 1874, 165. Stem slender, woody. Leaves laxly disposed, ascending; petiole channelled, 4–8 in. long; blade oblong, narrowed to a deltoid cuspidate apex, 4–6 in. long, 2–3 in. broad at the middle, rounded at the base to the winged apex of the petiole, firm in texture, glossy; midrib visible beneath only in the upper half. Inflorescence shortly peduncled; flowers in few dense clusters at the end and side of the rhachis; pedicels $\frac{1}{8}$–$\frac{1}{6}$ in. long; bracts minute. Perianth 1 in. long; segments shorter than the very slender cylindrical tube.—*D. densiflora*, Baker in Journ. Linn. Soc. xiv. 535.

Upper Guinea. Fernando Po, *Mann!*

Lower Guinea. Gaboon River, *Mann*, 1037!

38. **D. monostachya,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 252. Acaulescent. Leaves all in a radical rosette, ascending; petiole slender, above 1 ft. long; blade lanceolate, 1 ft. long, $1\frac{1}{2}$–2 in. broad at the middle, narrowed gradually to the apex, rounded at the base; midrib not visible in the upper half. Inflorescence a dense simple oblong raceme 2–3 in. long; peduncle 1 ft. long, with many empty bracts; pedicels very short, fascicled; bracts minute. Perianth not seen. Berry 2–3-seeded, deeply lobed.

Lower Guinea. Princes Island, *Welwitsch*, 3744!

Var. *angolensis*, Baker. Leaves oblong, 6–8 in. long, 2–$2\frac{1}{2}$ in. broad, rounded at the base. Peduncle shorter. Raceme not so dense.

Lower Guinea. Angola: Golungo Alto, *Welwitsch!*

39. **D. phrynioides,** *Hook. in Bot. Mag. t.* 5352. Subacaulescent. Leaves in a radical rosette; petiole slender, erect, $\frac{1}{2}$–1 ft. long; blade ovate or oblong, acuminate, 6–9 in. long, 2–4 in. broad, rounded at the base, moderately firm, sometimes spotted with white; midrib invisible in the upper half. Inflorescence a shortly peduncled globose head, $1\frac{1}{2}$ in. diam., surrounded by many ovate acute bracts as long as the flowers. Perianth $\frac{3}{4}$ in. long; segments oblong, $\frac{1}{3}$ the length of the

cylindrical tube. Berry 1–2-seeded.—Regel, Revis. Dracæn. 48; Baker in Journ. Linn. Soc. xiv. 537.

Upper Guinea. Lagos: Yoruba, *Millson!* Fernando Po, *Mann*, 417!

Introduced into cultivation in 1860.

40. **D. phanerophlebia,** *Baker.* Subacaulescent. Leaves few in a dense rosette, erect; petiole slender, 8–12 in. long; blade ovate, acuminate, of firm texture, 6–7 in. long, 4–4½ in. broad below the middle, broadly rounded at the base, with a midrib distinct from the base to the apex and three distinct main veins springing from it on each side near the base. Inflorescence a small globose head, surrounded by large ovate bracts, with a short cernuous peduncle. Perianth not seen. Berry ½ in. diam., 3-seeded, 3-lobed.

Lower Guinea. Gaboon: Sierra del Crystal, *Mann*, 1625!

41. **D. Afzelii,** *Baker in Journ. Bot.* 1874, 167. Stem slender, much branched. Leaves moderately firm, shortly petiolate, lanceolate, 5–6 in. long, 1¼ in. broad at the middle, narrowed gradually to the base and apex; midrib invisible in the upper part. Inflorescence a dense subsessile terminal raceme; pedicels very short, articulated at the apex; bracts ovate, or lanceolate, ⅙–¼ in. long. Perianth ½ in. long; segments shorter than the cylindrical tube.—Baker in Journ. Linn. Soc. xiv. 536.

Upper Guinea. Sierra Leone, *Afzelius!*

No specimen at Kew.

42. **D. cylindrica,** *Hook. f. in Bot. Mag. t.* 5846. Stem simple, slender, reaching a length of 10–12 ft. Leaves crowded, spreading; petiole channelled, 2–3 in. long; blade oblanceolate, of moderately firm texture, 6–9 in. long, 1½–2 in. broad above the middle, deltoid at the tip, narrowed gradually from the middle to the petiole; midrib distinct beneath nearly to the apex. Inflorescence a dense globose sessile terminal head 2–3 in. long; bracts ovate, subcoriaceous, nearly as long as the flowers. Perianth ¾–1 in. long; segments linear-oblong, half as long as the slender tube.—Baker in Journ. Linn. Soc. xiv. 536.

Upper Guinea. Old Calabar, *Mann*, 2328! *Thomson*, 17!

Received alive at Kew from the Edinburgh Botanic Garden in 1870.

43. **D. bicolor,** *Hook. in Bot. Mag. t.* 5248. Stem slender, simple, reaching a length of 12–15 ft. Leaves moderately dense; petiole winged, channelled, 2–8 in. long, dilated and clasping at the base; blade oblanceolate-oblong, cuspidate, of moderately firm texture, ½–1 ft. long, 2–4½ in. broad at the middle, narrowed gradually from the middle to the base; midrib visible beneath only in the lower half. Inflorescence a dense short peduncled globose head 2 in. diam., surrounded by many ovate bracts 1 in. long. Perianth subsessile, 9–10 lin. long, white tinged with red; segments as long as the cylindrical tube. Stamens rather shorter than the perianth-segments.

Style exserted.—Regel, Revis. Dracæn. 45; Baker in Journ. Linn. Soc. xiv. 537.

Upper Guinea. Fernando Po, *Mann*, 98! and cultivated specimens!
Introduced into cultivation at Kew about 1860.

44. **D. Elliotii,** *Baker.* Stem short, slender, woody. Leaves crowded, ascending; petiole winged, channelled, 3–4 in. long, dilated at the base; blade oblong, acute, of moderately firm texture, 4–5 in. long, 2–2½ in. broad at the middle, cuneate at the base; midrib not visible beneath in the upper half. Inflorescence a small globose sessile head. Perianth ⅝ in. long; segments linear-oblong, half as long as the slender cylindrical tube. Stamens as long as the perianth-segments.

Upper Guinea. Sierra Leone: in thick bush at Kukuma, *Scott-Elliot*, 4689!

45. **D. goldieana,** *Bull, Cat.* 1871, viii. Stem short, simple, woody. Leaves crowded; petiole channelled, 1–3 in. long, clasping at the base; blade ovate, acuminate, 6–9 in. long, 3–5 in. broad, broadly rounded at the base, marbled with irregular transverse bands of bright green and silvery grey in about equal proportions; midrib distinct beneath nearly to the apex. Flowers in a dense globose sessile head 2 in. diam.; surrounded by a few reduced leaves; pedicels very short; bracts scariose, oblong-cuspidate, clasping the lower part of the flowers. Perianth white, 1 in. long; segments rather shorter than the tube. Stamens rather shorter than the perianth-segments. Style finally exserted.—Florist, 1873, 187; Bull, Cat. 1877, 9, t. 8; Baker in Journ. Linn. Soc. xiv. 535; Bot. Mag. t. 6630; André in Lind. Ill. Hort. 1878, t. 300.

Upper Guinea. Introduced about 1870, by the Rev. Hugh Goldie, of the United Presbyterian Missionary Society, to the Edinburgh Botanic Garden.

46. **D. ovata,** *Gawl. in Bot. Mag. t.* 1180. Stems short, branched. Leaves rosulate, oblong, 3–4 in. long, 2 in. broad at the middle; petiole 1–2 in. long. Flowers crowded into a short subsessile terminal subspicate raceme; primary bracts ovate, nearly as long as the flowers; pedicels very short, densely fascicled. Perianth 8–9 lin. long; segments linear, as long as the tube. Stamens not exserted —Schultes f. in Roem. & Schultes, Syst. Veg. vii. 345; Kunth, Enum. v. 13; Baker in Journ. Linn. Soc. xiv. 536. *Aletris pumila,* J. Donn, Hort. Cant. edit. ii. 42.

Upper Guinea. Sierra Leone, *Afzelius.*
No specimen at Kew.

47. **D. Lecomtei,** *Hua, Contr. Fl. Congo Franç. Lil.* 15. Nearly allied to *D. ovata,* Gawl. A branched shrub 3–5 ft. high. Leaves oblong, 5–6 in. long, 2–3 in. broad, crowded at the tip of the branches, acute, narrowed to the base; petiole very short, channelled, amplexicaul. Racemes very dense, panicled, 4–5 in. long; bracts large, ovate, amplexicaul, the lower crowded and flowerless; flowers white,

5–6 in a cluster, sessile. Perianth nearly 1 in. long; tube cylindrical, as long as the lobes.

Lower Guinea. Southern French Congo; borders of the lagoon of Mayumba, *Lecomte*, E 20! Growing with *D. arborea*.

No specimen at Kew.

4. **KNIPHOFIA,** Moench; Benth. et Hook. f. Gen. Pl. iii. 775.

Perianth-tube cylindrical or narrowly funnel-shaped; lobes short, obtuse. Stamens 6, hypogynous, often exserted; filaments filiform; anthers oblong, versatile. Ovary ovoid, 3-celled; ovules many in a cell; style long, filiform; stigma minute, capitate. Capsule globose or ovoid, loculicidally 3-valved. Seeds angled; testa black; embryo oblong, shorter than the albumen.—Rootstock short, vertical, sending out many cylindrical root-fibres. Leaves all radical, long, dry, linear or ensiform, usually acutely keeled. Flowers racemose, bright yellow or red; pedicels short, articulated at the apex; bracts persistent, scariose.

Species 30–40, the others in South Africa and Madagascar.

Leaves linear. Raceme dense.
- Stamens not exserted.
  - Perianth $\frac{5}{8}$–$\frac{3}{4}$ in. long . . . . . 1. *K. abyssinica.*
  - Perianth about 1 in. long.
    - Style not exserted . . . . . 2. *K. Thomsoni.*
    - Style slightly exserted . . . . . 3. *K. Grantii.*
    - Style much exserted . . . . . 4. *K. longistyla.*
  - Perianth $1\frac{1}{4}$–$1\frac{1}{2}$ in. long . . . . . 5. *K. isoëtifolia.*
- Stamens exserted.
  - Stamens $1\frac{1}{2}$ times the length of the perianth . . 6. *K. Leichtlini.*
  - Stamens twice the length of the perianth . . 7. *K. comosa.*

Leaves linear. Racemes lax.
- Leaves few . . . . . 8. *K. Schimperi.*
- Leaves numerous . . . . . 9. *K. insignis.*

Leaves ensiform. Racemes dense.
- Stamens not exserted.
  - Perianth 1 in. long . . . . . 10. *K. zombensis.*
  - Perianth $1\frac{1}{4}$–$1\frac{1}{2}$ in. long . . . . . 11. *K. Kirkii.*
- Stamens much exserted.
  - Leaves under 1 in. broad . . . . . 12. *K. densiflora.*
  - Leaves 1–$1\frac{1}{2}$ in. broad . . . . . 13. *K. foliosa.*

1. **K. abyssinica,** *Schweinf. Beitr. Fl. Æthiop.* 294. Leaves few, linear, about 1 ft. long, $\frac{1}{4}$ in. broad low down, smooth on the margin, not acutely keeled. Peduncle slender, as long as the leaves. Raceme dense, oblong, 1–2 in. long; pedicels very short, all deflexed; bracts lanceolate, the lower $\frac{1}{4}$ in. long. Perianth cylindrical, red, $\frac{5}{8}$–$\frac{3}{4}$ in. long, $\frac{1}{12}$ in. diam., not constricted above the ovary; lobes very small. Stamens finally just exserted.—Baker in Journ. Linn. Soc. xi. 362. *Veltheimia abyssinica*, Red. Lil. t. 186.

Nile Land. Abyssinia: Shoa; Ankober, *Roth*, 62!

This is totally different from the South African *K. pumila*, with which Kunth unites it.

2. **K. Thomsoni,** *Baker in Journ. Linn. Soc.* xxi. 406. Root-fibres many, slender. Old leaves breaking up into fine fibres. Produced leaves few, linear, 1–2 ft. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad low down, not strongly keeled, smooth on the edges. Peduncle moderately stout, $1\frac{1}{2}$–2 ft. long. Raceme dense, finally $\frac{1}{2}$–1 ft. long; pedicels short, deflexed; bracts ovate-lanceolate, $\frac{1}{4}$ in. long. Perianth cylindrical, 1 in. long; lobes small, obtuse. Stamens and style not exserted. Capsule globose, $\frac{1}{6}$ in. diam.—Engl. Hochgebirgsfl. Trop. Afr. 163.

Mozamb. Dist. German East Africa: Kilimanjaro; at 8000–11,000 ft., *Thomson! Johnston*, 19! *Meyer*, 225, *Ehlers*, 18, above Mumba, 8500 ft., *Volkens*, 790! at Morang, and the higher slopes, 5000–10,000 ft., *Taylor*. Arusha and Kahe, plains and forests, about 3000 ft., *Taylor*.

3. **K. Grantii,** *Baker in Journ. Linn. Soc.* xi. 363. Root-fibres many, cylindrical. Leaves few, linear, acutely keeled, 1–$1\frac{1}{2}$ ft. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad low down, smooth on the edges. Peduncle slender, as long as the leaves. Raceme dense, 2–3 in. long; pedicels short, deflexed; upper flowers red, lower yellow; bracts lanceolate, the lower $\frac{1}{4}$ in. long. Perianth subcylindrical, under 1 in. long, constricted above the ovary, $\frac{1}{6}$ in. diam. at the throat; lobes ovate, obtuse. Stamens about as long as the perianth. Style finally exserted.—Trans. Linn. Soc. xxix. 159, t. 101 B.

Mozamb. Dist. German East Africa: Swamps in the Mgunda Mkali, 4400 ft., 0° S. lat., *Speke & Grant*, 31!

"The natives collect the flowers for spinach, which is very good, but honey-tasting."

4. **K. longistyla,** *Baker in Kew Bulletin*, 1893, 158. Rootstock subglobose, with many slender fibres. Leaves numerous, erect, linear, $1\frac{1}{2}$–2 ft. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad low down, not acutely keeled, smooth on the edge. Peduncle as long as the leaves. Raceme dense, finally $\frac{1}{2}$ ft. long; pedicels very short; bracts oblong, $\frac{1}{8}$ in. long. Perianth cylindrical, nearly 1 in. long; segments small, oblong. Stamens not exserted. Style much exserted. Capsule ovoid, $\frac{1}{6}$ in. diam.

Mozamb. Dist. British Central Africa: Nyasaland; Mount Zomba, amongst stones, 6000 ft., *Kirk!* and without precise locality, *Buchanan*, 1482!

5. **K. isoëtifolia,** *Hochst. in Flora*, 1844, 30. Root-fibres much thickened. Leaves few, flaccid, linear, 6–9 in. long, $\frac{1}{6}$ in. diam., channelled down the face, rounded on the back, smooth on the margin. Peduncle slender, longer than the leaves. Raceme short, dense; pedicels short, curved; bracts lanceolate, $\frac{1}{4}$–$\frac{1}{3}$ in. long. Perianth cylindrical, 15–18 lin. long, much constricted above the ovary; lobes small, deltoid. Stamens not exserted. Style finally exserted.—A. Rich. Tent. Fl. Abyss. ii. 324; Schweinf. Beitr. Fl. Ægypt. 294; Baker in Journ. Linn. Soc. xi. 362; Engl. Hochgebirgsfl. Trop. Afr. 162. *Rudolpho-Roemeria isoëtifolia*, Steud. ex Hochst. in Flora, 1844, 30.

Nile Land. Abyssinia: Samen; in mountain meadows, near Enjedcap, *Schimper*, 752! Nofas Motuha, *Steudner*, 474; and without precise locality *Schimper*, 511!

6. **K. Leichtlini,** *Baker ex Hook. f. in Bot. Mag. t.* 6716. Root-fibres many, slender. Leaves many, linear, strongly keeled, reaching in cultivation a length of 3–4 ft., $\frac{1}{2}$ in. broad low down, smooth on the edges. Peduncle moderately stout, as long as the leaves. Raceme very dense, oblong, 3–4 in. long; pedicels very short, deflexed; bracts lanceolate, acute, $\frac{1}{6}$–$\frac{1}{4}$ in. long. Perianth bright yellow, narrowly funnel-shaped, $\frac{5}{8}$–$\frac{3}{4}$ in. long, $\frac{1}{6}$ in. diam. at the throat; lobes ovate, very obtuse. Stamens and style distinctly exserted.

Nile Land. Abyssinia: cultivated specimens!

Introduced into cultivation by *Schimper* between 1872 and 1876; described from living plants cultivated by *Leichtlin* in 1881.

Var. *distachya,* Baker in Gard. Chron. 1884, xxii. 230, is a form with a forked peduncle and small accessory lateral raceme.

Nile Land. Abyssinia: cultivated specimens!

7. **K. comosa,** *Hochst. in Flora,* 1844, 31. Rootstock thick and short, sending out copious cylindrical root-fibres. Leaves numerous, linear, bright green, acutely keeled, 1$\frac{1}{2}$–2 ft. long in wild specimens, $\frac{1}{2}$ in. broad low down, twice as long under cultivation, smooth on the edges. Peduncle moderately stout, as long as the leaves. Raceme very dense, oblong, 3–4 in. long in flower; pedicels very short, deflexed; bracts large, lanceolate or ovate-lanceolate. Perianth bright yellow, funnel-shaped, $\frac{1}{2}$ in. long, dilated suddenly at the middle; lobes very obtuse. Stamens and style twice as long as the perianth; filaments bright red. Capsule globose, $\frac{1}{6}$ in. diam.—Baker in Journ. Bot. 1874, 4; Bot. Mag. t. 6569. *K. foliosa,* Engl. Hochgebirgsfl. Trop. Afr. 164, not of Hochst.

Nile Land. Abyssinia: Begemeder; Gafat, 8300 ft., *Schimper,* 1145! Jan Meda, 8500 ft., *Schimper,* 1192! Somaliland: between Oi and Jaribule, *Riva,* 642! and between Biddume and Volghe, *Riva,* 237!

8. **K. Schimperi,** *Baker in Journ. Bot.* 1874, 4. Relics of old leaves split into fine fibres. Produced leaves few, 1$\frac{1}{2}$ ft. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad above the dilated base, channelled down the face, smooth on the margin. Peduncle slender, 1$\frac{1}{2}$–2 ft. long. Raceme very lax, $\frac{1}{2}$–1 ft. long; pedicels $\frac{1}{6}$–$\frac{1}{8}$ in. long, the lower much decurved; bracts lanceolate, $\frac{1}{4}$–$\frac{1}{3}$ in. long. Perianth subcylindrical, curved, pale yellow, 1–1$\frac{1}{4}$ in. long; lobes small, deltoid. Stamens and style included.—*K. elegans,* Engl. Hochgebirgsfl. Trop. Afr. 162.

Nile Land. Eritrea: near Habab, 6000 ft., *Hildebrandt,* 378. Abyssinia: Begemeder; near Debra Tabor, 8200 ft., on rocks near the banks of streams, *Schimper,* 1200!

A Somaliland plant gathered by *Riva* (728) in meadows between Surro and Rogono, is either this or a near ally. It has closer flowers and a stouter peduncle than the Abyssinian plant. I have not seen the leaves.

9. **K. insignis,** *Rendle in Journ. Bot.* 1896, 131. Leaves numerous, thin, linear, 2 ft. long, $\frac{1}{2}$–$\frac{5}{8}$ in. broad low down; midrib plicate; edge scabrous. Peduncle rather longer than the leaves. Raceme 10 in.

long, lax in the lower part, dense upwards; pedicels short; bracts acuminate, $\frac{1}{4}$–$\frac{1}{3}$ in. long. Perianth $1\frac{1}{4}$ in. long, constricted above the ovary, often curved; lobes short, ovate. Stamens $\frac{3}{4}$ the length of the perianth. Style exserted.

Nile Land. Gallaland: Arusa Distr.; Sheikh Mahomed, *Donaldson Smith.*

No specimen in the Kew Herbarium.

10. **K. zombensis,** *Baker in Kew Bulletin*, 1893, 158. Leaves many, ensiform, subcoriaceous, 1–2 ft. and more long, $\frac{3}{4}$ in. broad low down, smooth on the margin, not strongly keeled. Peduncle long, stout. Raceme dense, 3–4 in. long; pedicels very short; bracts linear, white with a distinct brown keel, the lower $\frac{1}{2}$ in. long. Perianth cylindrical, narrowed towards the base, 1 in. long; lobes small, ovate. Stamens not exserted. Style finally exserted. Capsule globose, $\frac{1}{6}$ in. diam.

Mozamb. Dist. British Central Africa: Nyasaland; abundant on the slopes of Mount Zomba, *Buchanan*, 161! Mount Malosa, 4000–6000 ft., *Whyte!* and without precise locality, *Buchanan*, 664!

11. **K. Kirkii,** *Baker in Gard. Chron.* 1887, ii. 712. Leaves numerous, ensiform, acutely keeled, reaching a length of 5–6 ft. and a breadth of 2–$2\frac{1}{2}$ in. above the base, nearly smooth on the edges. Peduncle moderately stout, 4 ft. long. Raceme dense, 4–5 in. long; pedicels short, deflexed; bracts oblong, obtuse, the lower $\frac{1}{4}$ in. long. Perianth slender, cylindrical, orange or tinged with red, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long; lobes small, ovate. Stamens and style as long as the perianth.

Mozamb. Dist. Zanzibar (?), cultivated specimen, *Kirk!*

Described from a living plant sent by Sir John Kirk in 1884 to Kew, where it flowered in November 1887.

12. **K. densiflora,** *Engl. Hochgebirgsfl. Trop. Afr.* 163. Caudex thick, woody, 4–8 in. long below the rosette of leaves. Leaves numerous, ensiform, 16–20 in. long, nearly 1 in. broad low down, serrulate on the margin. Peduncle stout, 2–3 ft. long. Raceme dense, 8–12 in. long; pedicels short, deflexed; bracts ovate-lanceolate, $\frac{1}{4}$–$\frac{1}{3}$ in. long. Perianth funnel-shaped, $\frac{3}{4}$ in. long, slightly constricted above the ovary, $\frac{1}{6}$–$\frac{1}{5}$ in. diam. at the throat. Stamens and style much exserted. Capsule subglobose, smooth, $\frac{1}{4}$–$\frac{1}{3}$ in. diam.

Nile Land. Abyssinia: Urahut; Mount Erareta, *Schimper*, 701!

13. **K. foliosa,** *Hochst. in Flora*, 1844, 31. Rootstock short, with many cylindrical fibres. Leaves numerous, ensiform, $1\frac{1}{2}$–2 ft. long, 1–$1\frac{1}{2}$ in. broad above the dilated base, acutely keeled, scabrous on the margin. Peduncle stout, erect, as long as the leaves. Raceme very dense, $\frac{1}{2}$–1 ft. long; pedicels very short, deflexed; bracts ovate, acute, the lower $\frac{1}{4}$ in. long. Perianth subcylindrical, bright yellow or tinged with red, $\frac{3}{4}$ in. long; lobes small, ovate. Stamens and style much exserted.—Baker in Journ. Bot. 1874, 4; Bot. Mag. t. 6742. *K.*

quartiniana, A. Rich. Tent. Fl. Abyss. ii. 323; Baker in Journ. Linn. Soc. xi. 362; Gard. Chron. 1876, v. 42; Regel, Gartenfl. xxvi. 89, 196, t. 907, excl. syn.; Engl. Hochgebirgsfl. Trop. Afr. 164.

Nile Land. Abyssinia: Wodjerat, *Quartin-Dillon & Petit*, 179! Tigre; Mount Kubbi, near Adowa, *Schimper*, 1003!

5. **NOTOSCEPTRUM**, Benth.; Benth. et Hook. f. Gen. Pl. iii. 775.

Perianth campanulate; tube short; segments 6, oblong, obtuse. Stamens 6, hypogynous; filaments filiform; anthers oblong, dorsifixed. Ovary globose, 3-celled; ovules 4–6 in a cell, superposed; style filiform; stigma small, capitate. Capsule globose, loculicidally 3-valved. Seeds angled; testa black; albumen fleshy; embryo nearly as long as the albumen.—Perennial herbs, with the habit, leaves and inflorescence of *Kniphofia*, from which they differ by their short campanulate perianth.

Species 3–4, the others in Natal and Transvaal.

Bud globose	1. *N. benguellense.*
Bud oblong	2. *N. andongense.*

1. **N. benguellense,** *Benth. in Benth. & Hook. f. Gen. Pl.* iii. 775, Rootstock woody, vertical, with many cylindrical fibres. Leaves numerous, linear, acutely keeled, 3–4 ft. long, $\frac{1}{2}$ in. broad low down, tapering gradually to a long point, smooth on the edge. Scape shorter than the leaves. Raceme dense, subspicate, cylindrical, 1 ft. long, under 1 in. diam.; pedicels very short or obsolete; bracts small, ovate, membranous. Perianth campanulate, $\frac{1}{6}$ in. long; lobes rather longer than the tube. Stamens and style shortly exserted. Capsule globose, rugose, $\frac{1}{5}$ in. diam.—*Kniphofia benguellensis*, Baker in Trans. Linn. Soc. ser. 2, Bot. i. 246.

Lower Guinea. Angola: Huilla; in damp places, growing in masses, *Welwitsch*, 3736!

2. **N. andongense,** *Benth. in Benth. & Hook. f. Gen. Pl.* iii. 775 (*by error N. angolense*). Rootstock stout, with cylindrical fibres reaching 1–1$\frac{1}{2}$ ft. long. Leaves linear, reaching a length of 8–9 ft., $\frac{1}{2}$–$\frac{3}{4}$ in. broad low down, tapering gradually to a long point. Peduncle long and stout. Raceme very dense, subspicate, cylindrical, 1 ft. long; pedicels very short; bracts minute, ovate-oblong, membranous. Perianth oblong, reddish, $\frac{1}{4}$ in. long; lobes as long as the tube.—Engl. Jahrb. xv. 471. *Kniphofia andongensis*, Baker in Trans. Linn. Soc. ser. 2, Bot. i. 246.

Lower Guinea. Angola: Pungo Andongo; in grassy thickets, *Welwitsch*, 3733!

6. **ALOE,** Linn.; Benth. et Hook. f. Gen. Pl. iii. 776.

Perianth cylindrical, straight or slightly curved; segments subequal, as long as or much longer than the tube, connivent except at the tip. Stamens 6, hypogynous, rarely longer than the perianth; filaments

filiform; anthers oblong, versatile, dehiscing down the face. Ovary ovoid, 3-celled; ovules many in a cell; style subulate; stigma small, capitate. Capsule oblong-trigonous, loculicidally 3-valved. Seeds triquetrous or flattened, sometimes winged; testa black; albumen fleshy; embryo straight.—Caudex produced or obsolete. Leaves fleshy, very various in shape, margined with spines. Peduncle simple or forked. Flowers many, racemose, usually bright red or yellow, tipped with green; pedicels articulated at the apex; bracts scariose, persistent.

Species 100, the others mostly Cape, a few reaching Madagascar, Socotra, India, China, and the Mediterranean region.

Acaulescent. Leaves long, thin, linear, erect.
Perianth $\frac{3}{4}$—$\frac{7}{8}$ in. long.
Leaves $\frac{1}{8}$ in. broad . . . . . 1. *A. Johnstoni.*
Leaves $\frac{1}{2}$ in. broad . . . . . 2. *A. Buchanani.*
Perianth $1\frac{1}{4}$ in. long . . . . . 3. *A. Nuttii.*
Caulescent. Leaves lanceolate, under 1 ft. long, densely rosulate.
Perianth-tube short.
Flowers secund . . . . . 4. *A. secundiflora.*
Flowers not secund.
Perianth 7–8 lin. long . . . . . 5. *A. andongensis.*
Perianth $\frac{3}{4}$—$\frac{7}{8}$ in. long . . . . . 6. *A. Stuhlmanni.*
Perianth 1 in. long.
Inflorescence paniculate.
Bracts small . . . . . 7. *A. rabaiensis.*
Bracts large . . . . . 8. *A. otallensis.*
Inflorescence racemose . . . . . 9. *A. vituensis.*
Perianth $1\frac{1}{2}$ in. long.
Pedicels short . . . . . 10. *A. montana.*
Pedicels long . . . . . 11. *A. Steudneri.*
Perianth-tube as long as the segments.
Bracts small . . . . . 12. *A. Kirkii.*
Bracts large . . . . . 13. *A. Schinzii.*
Perianth-tube longer than the segments.
Pedicels short . . . . . 14. *A. macrosiphon.*
Pedicels long.
Marginal teeth of leaf small.
Leaves 2 in. broad . . . . . 15. *A. Menyharthi.*
Leaves 4 in. broad . . . . . 16. *A. rubrolutea.*
Marginal teeth of leaf large . . . . 17. *A. venenosa.*
Caulescent. Leaves oblong-lanceolate, under 1 ft. long, densely rosulate.
Pedicels long . . . . . 18. *A. borziana.*
Pedicels short . . . . . 19. *A. ruspoliana.*
Caulescent. Leaves oblong or oblong-lanceolate, densely rosulate, much spotted.
Leaves thick.
Racemes short, very dense.
Leaves 2 in. broad . . . . . 20. *A. lateritia.*
Leaves 6–7 in. broad . . . . . 21. *A. Schimperi.*
Racemes oblong or cylindrical.
Perianth $\frac{3}{4}$-1 in. long.

Pedicels short . . . . . 22. *A. concinna.*
Pedicels $\frac{1}{4}$–$\frac{1}{2}$ in. long . . . . . 23. *A. zebrina.*
Pedicels 1 in. or more long . . . . 24. *A. hereroensis.*
Perianth 1–1$\frac{1}{2}$ in. long.
Bracts small.
Pedicels short . . . . . 25. *A. agavefolia.*
Pedicels $\frac{1}{2}$–$\frac{3}{4}$ in. long.
Marginal teeth small . . . . 26. *A. macrocarpa.*
Marginal teeth large . . . . 27. *A. commutata.*
Pedicels 1–1$\frac{1}{2}$ in. long . . . . 28. *A. obscura.*
Bracts large . . . . . 29. *A. platyphylla.*
Leaves thin . . . . . 30. *A. tenuifolia.*
Leaves lanceolate, laxly disposed on a long slender stem.
Pedicels $\frac{1}{4}$ in. long . . . . . 31. *A. Hildebrandtii.*
Pedicels $\frac{1}{2}$ in. long.
Raceme short, simple . . . . . 32. *A. penduliflora.*
Racemes oblong, panicled . . . . . 33. *A. confusa.*
Caulescent. Leaves long, ensiform, densely rosulate, not spotted.
Perianth-segments shorter than the tube.
Marginal teeth close . . . . . 34. *A. Barteri.*
Marginal teeth distant . . . . . 35. *A. constricta.*
Perianth-segments about as long as the tube.
Leaves about 2 in. broad . . . . 36. *A. brachystachys.*
Leaves about 3 in. broad . . . . 37. *A. Rivæ.*
Leaves about 4 in. broad . . . . 38. *A. vera.*
Leaves 6–7 in. broad . . . . . 39. *A. percrassa.*
Perianth-segments longer than the tube.
Perianth under 1 in. long.
Racemes short, globose . . . . 40. *A. Volkensii.*
Racemes oblong . . . . . 41. *A. angolensis.*
Racemes cylindrical . . . . . 42. *A. palmiformis.*
Perianth about 1 in. long.
Pedicels very short . . . . . 43. *A. Schœlleri*
Pedicels $\frac{1}{4}$–$\frac{1}{2}$ in. long.
Bracts small . . . . . 44. *A. Schweinfurthii.*
Bracts large.
Bracts ovate-lanceolate . . . . 45. *A. littoralis.*
Bracts ovate . . . . . 46. *A. cryptopoda.*
Pedicels $\frac{3}{4}$–1 in. long.
Leaves 3–4 in. broad . . . . . 47. *A. abyssinica.*
Leaves 5–6 in. broad . . . . . 48. *A. Camperii.*
Perianth 1$\frac{1}{4}$ in. long . . . . . 49. *A. crassipes.*
Caudex arborescent, much branched . . . . 50. *A. dichotoma.*

1. **A. Johnstoni,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* ii. 351, *t.* 63. Acaulescent. Rootstock globose. Leaves 8–12, linear from an ovate base, erect, 1–1$\frac{1}{2}$ ft. long, $\frac{1}{8}$ in. broad, thin for the genus, channelled down the face, with a few minute spines on the margin and midrib beneath. Peduncle simple, stiffly erect, 15–18 in. long, with many ovate scariose empty bracts. Raceme dense, capitate, few-flowered; pedicels ascending, lower $\frac{3}{4}$–1 in. long; bracts small, ovate-lanceolate. Perianth pale pink, curved, $\frac{3}{4}$ in. long; tube very short. Stamens as long as the perianth. Capsule oblong, as long as the perianth.

Nile Land. British East Africa: Taveta, 2000 ft., *Johnston!*

Nearly allied to the South African *A. Cooperi*, Baker (Bot. Mag. t. 6377).

2. **A. Buchanani,** *Baker in Kew Bulletin*, 1895, 119. Acaulescent. Leaves 8–10, distichous, erect, linear, 1½ ft. long, ½ in. broad low down, thin for the genus, deeply channelled down the face, with a few white spots in the lower part; marginal prickles very minute. Peduncle simple, 1½–2 ft. long, with many ovate empty bracts. Raceme dense, 3–4 in. long; pedicels ascending, the lower 1 in. long; bracts green, ovate-cuspidate, ½ in. long. Perianth pale-red with a green tip, ¾–⅞ in. long; tube very short. Stamens as long as the perianth.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, cultivated specimen, *Buchanan!*

Described from a plant that flowered at Kew, December 1894.

3. **A. Nuttii,** *Baker in Hook. Ic. t.* 2513. Acaulescent. Leaves erect, linear, not fleshy, unspotted, channelled down the face, 1½ ft. long, ¼ in. broad low down; marginal teeth obsolete. Peduncle simple, 1½ ft. long. Raceme moderately dense, cylindrical, 6–9 in. long; pedicels ascending, cernuous at the tip, the lower 1 in. long; bracts ovate, ½–¾ in. long. Perianth pale-red, 14–15 lin. long; tube half as long as the segments. Stamens included.

Mozamb. Dist. British Central Africa: Urungu; Fwambo, 5200 ft., *Carson*, 29! *Nutt!* North Nyasaland: between Kondowe and Karonga, *Whyte!*

4. **A. secundiflora,** *Engl. Pfl. Ost-Afr. C.* 140. Caudex very short. Leaves very thick, lanceolate-deltoid, 1 ft. long, 3 in. broad low down; marginal teeth distant, small, deltoid, with a horny-brown tip. Inflorescence much-branched; branches ascending; racemes lax, secund, ½ ft. long; bracts minute, deltoid-cuspidate, pedicels spreading, ⅙–¼ in. long. Perianth 1 in. long; tube short; segments linear, red with yellow edge. Stamens included. Style exserted.

Mozamb. Dist. German East Africa: Kilimanjaro, at the foot of Nushoru Hill, 2000–2500 ft., *Volkens*, 530!

No specimen at Kew.

5. **A. andongensis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 263. Caudex 1–2 ft. long, with 2–3 ascending branches. Leaves densely rosulate, lanceolate, glaucous, unspotted, 8–9 in. long, 1¼–1½ in. broad low down; teeth small, horny, deltoid-cuspidate. Panicle deltoid; racemes dense, capitate, 2–3 in. long; pedicels ¼–⅓ in. long, the central spreading, the lower deflexed; bracts lanceolate, as long as the pedicels. Perianth yellowish-red, 7–8 lin. long; tube short, campanulate. Stamens as long as the perianth.—Baker in Journ. Linn. Soc. xviii. 173.

Lower Guinea. Angola: Pungo Andongo; frequent in rocky places, *Welwitsch*, 3729!

6. **A. Stuhlmanni,** *Baker.* Leaves lanceolate, 1 ft. or more long, 2 in. broad low down, tapering gradually to the point, moderately thick;

idate, horny, $\frac{1}{6}$ in. long, not very close. branches many, ascending, all simple; ense, 2–4 in. long; bracts very small, ovate; pedicels very short, ascending, articulated at the apex. Perianth under 1 in. long; tube short, campanulate; segments long, linear. Stamens included.

Mozamb. Dist. Zanzibar, *Stuhlmann*, 21!

No specimen at Kew.

7. **A. rabaiensis,** *Rendle in Journ. Linn. Soc.* xxx. 410. Leaves rosulate, lanceolate, fleshy, glaucous green tinged with red, 1 ft. long, $1\frac{1}{2}$–2 in. broad, tapering gradually to the point; teeth distant, deltoid, $\frac{1}{8}$ in. long, with a brown horny tip. Peduncle branched; branches $\frac{1}{2}$ ft. long; flowers in globose clusters at the end of the branches; pedicels ascending, 1 in. long; bracts ovate, minute. Perianth cylindrical, 1 in. long; segments linear, three times the length of the tube. Stamens nearly as long as the perianth. Style exserted.

Nile Land. British East Africa: Rabai Hills, at Mgandini, *Taylor!*

No specimen at Kew.

8. **A. otallensis,** *Baker.* Leaves lanceolate, 1 ft. long, $1\frac{1}{2}$–2 in. broad low down, tapering gradually to the point, thick, rigid; marginal teeth small, rather close, horny, deltoid. Inflorescence panicled; branches ascending; racemes dense, oblong, $1\frac{1}{2}$–3 in. long; bracts oblong, obtuse, scariose, $\frac{1}{3}$–$\frac{1}{2}$ in. long; pedicels ascending, rather shorter than the bracts. Perianth 1 in. long; segments linear, much longer than the tube. Stamens included. Style exserted.

Nile Land. Somaliland: Ahele Bekaka, between Coromme and Otallo, *Riva*, 1711!

No specimen at Kew.

9. **A. vituensis,** *Baker.* Leaves lanceolate, 1 ft. long, 15–18 lin. broad low down, tapering gradually to the acuminate point, moderately thick; marginal teeth small, deltoid, horny, patent, not very close. Peduncle simple, terete. Raceme lax, cylindrical, $\frac{1}{2}$ ft. long; bracts small, ovate; pedicels very short. Perianth 1 in. long; tube short, campanulate; lobes long, linear. Stamens and style included.

Nile Land. British East Africa: Witu, on sandy steppes, *Thomas*, 113!

No specimen at Kew.

10. **A. montana,** *Schinz in Bull. Herb. Boiss.* iv. *App.* iii. 39. Leaves lanceolate; marginal teeth minute, deltoid, green. Raceme dense; pedicels $\frac{1}{8}$–$\frac{1}{3}$ in. long, cernuous at the apex; bracts with a long cusp. Perianth yellow, $1\frac{1}{2}$ in. long; segments three times the length of the tube or as long. Stamens as long as the perianth or just exserted.

Lower Guinea. German South-west Africa: Hereroland; Gans Berg, *Fleck*, 461, 838.

No specimen at Kew.

11. **A. Steudneri,** *Schweinf. in Bull. Herb. Boiss.* ii. *App.* ii. 73. Leaves probably lanceolate. Peduncle stout, branched, $2\frac{1}{2}$ ft. long;

branches angled, bracteate from the base; racemes long, cylindrical, moderately dense; pedicels about 1 in. long, thickened and recurved at the apex; bracts ovate, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Perianth $1\frac{1}{2}$ in. long; tube very short. Stamens rather shorter than the perianth. Capsule oblong-cylindrical, above 1 in. long.

Nile Land. Eritrea: Peak of Sabr, 8000 ft., *Penzig*, 1424. Abyssinia: Samen, 10,000–11,000 ft., *Steudner*.

No specimen at Kew.

12. **A. Kirkii,** *Baker in Bot. Mag. t.* 7386. Caudex very short, stout, simple. Leaves thick, densely rosulate, lanceolate, nearly 1 ft. long, 2 in. broad low down, plain green, very smooth; marginal teeth large, deltoid, spreading. Peduncle compressed, deeply forked, 2 ft. long. Raceme dense, cylindrical, the end one nearly 1 ft. long; pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long, lower cernuous; bracts small, ovate. Perianth pale-red, tipped with yellow, above 1 in. long; segments as long as the tube. Stamens just exserted.

Mozamb. Dist. Zanzibar, cultivated specimen, *Kirk !*

Described from a plant that flowered at Kew, January 1894.

13. **A. Schinzii,** *Baker*. Leaves lanceolate, very thick and rigid, nearly 1 ft. long, $2\frac{1}{2}$ in. broad low down, tapering gradually to the point teeth large, brown, horny, deltoid-cuspidate. Peduncle stout, compressed, forked, above 1 ft. long. Racemes dense, oblong, 4–5 in. long; pedicels in the flowering stage shorter than the oblong scariose bracts, which are $\frac{1}{2}$ in. long. Perianth 1 in. long; segments as long as the oblong tube. Stamens not exserted. Capsule oblong-trigonous, $\frac{1}{2}$ in. long.

Mozamb. Dist. British Central Africa: Kalahari, at Oliphant's Kloof, *Schinz*, 42 partly !

14. **A. macrosiphon,** *Baker*. Leaves ensiform, under 1 ft. long, 1 in. broad low down, tapering gradually upwards; prickles deltoid, spreading, moderately close, moderately large, horn-tipped. Raceme long, lax, cylindrical; bracts oblong, scariose, $\frac{1}{3}$ in. long, pale with 3 brown ribs; pedicels half as long as the bract. Perianth $1\frac{1}{4}$ in. long; tube very long and slender, dilating at the base as the ovary grows; segments linear, spreading, $\frac{1}{4}$ in. long. Stamens distinctly shorter than the perianth. Style reaching the tip of the perianth-lobes.

Mozamb. Dist. German East Africa: between Urundi and Karagwe, 4000–5000 ft., *Scott-Elliot*, 8176 !

15. **A. Menyharthi,** *Baker*. Leaves short, acuminate, 2 in. broad; marginal teeth crowded, spreading, deltoid, $\frac{1}{8}$ in. long. Panicle ample; branches curved, ascending, the lower 1 ft. long; racemes very dense and short; pedicels spreading, $\frac{1}{2}$–$\frac{3}{4}$ in. long, articulated at the apex; bracts linear, shorter than the pedicels, white, with a green keel. Perianth pale-red, above 1 in. long; tube slender, cylindrical; segments

linear, connivent, half as long as the tube. Stamens included. Capsule oblong, $\frac{3}{4}$ in. long.

Mozamb. Dist. Zambesi Valley, at Nhaondue, *Menyharth*, 1248!

16. **A. rubrolutea,** *Schinz in Bull. Herb. Boiss.* iv. *App.* iii. 39. Stem thick, 3–5 ft. long. Leaf-rosette 20 in. diam.; leaves lanceolate, 4 in. broad low down; teeth short, remote, horny, tipped with brown. Racemes dense, copiously panicled; pedicels finally $\frac{1}{2}$ in. long; bracts large, broadly lanceolate. Perianth red-yellow; segments not over $\frac{1}{5}$ in. long. Stamens included.

Lower Guinea. German South-west Africa: Hereroland; Kuisib River, *Fleck*, 472. Great Namaqualand; Rehoboth, *Fleck*, 497A.

Mozamb. Dist. British Central Africa: Kalahari, at Oliphant's Kloof, *Fleck*, 263.

No specimen at Kew.

17. **A. venenosa,** *Engl. Jahrb.* xv. 471. Stem unknown. Leaves thick, lanceolate, above 1 ft. long, 3 in. broad low down; marginal teeth deltoid, $\frac{1}{4}$ in. long and broad, absent from the upper quarter of the leaf. Inflorescence copiously panicled, 1–1$\frac{1}{2}$ ft. long; peduncle stout; branches long, dense, racemose; bracts lanceolate, scariose, above $\frac{1}{2}$ in. long, about equalling the pedicels. Perianth pale red; tube cylindrical, slightly curved, above $\frac{1}{2}$ in. long; segments shorter than the tube. Stamens as long as the perianth.

South Central. Lunda: between Kimbundu and Nyangwe, *Pogge*, 1460.

No specimen at Kew.

18. **A. borziana,** *Terrac. in Boll. Ort. Palerm.* i. (1897) 67. Subcaulescent. Leaves densely rosulate, oblong-lanceolate, 8–10 in. long, 3 in. broad, glaucous green, very rigid and thick, usually flat on the face, irregularly spotted with white, distinctly margined with white; teeth distant, deltoid, horny. Peduncle 1$\frac{1}{2}$–2 ft. long. Inflorescence very compound; flowers in dense racemes at the end of the branches; pedicels about 1 in. long; bracts half as long as the pedicels. Perianth 1$\frac{1}{2}$ in. long; tube cylindrical, constricted above the ovary; segments yellow or tinged with red. Stamens included. Capsule 1–1$\frac{1}{2}$ in. long.

Nile Land. Abyssinia.

Described from plants grown in the Botanic Gardens at Palermo, of which the seeds were sent by Schimper and Braun.

No specimen at Kew.

19. **A. ruspoliana,** *Baker.* Leaves oblong-lanceolate, 9–10 in. long, nearly 3 in. broad low down, thin for the genus; marginal teeth very minute, distant, or altogether obsolete. Panicle 1 ft. long; branches long, ascending, the lower compound; flowers concentrated at the tip of the branches; bracts small, ovate; pedicels $\frac{1}{4}$ in. long. Perianth cylindrical, 1 in. long; segments shorter than the slender tube. Stamens and style included.

Nile Land. Somaliland: Ogaden; at Milmil and Imi, *Riva*, 918!

No specimen at Kew.

20. **A. lateritia,** *Engl. Pfl. Ost-Afr. C.* 140. Caudex very short. Leaves very thick, lanceolate, 9–10 in. long, 2 in. broad low down, mottled with white linear spots; teeth rather large, deltoid, with a horny tip. Inflorescence panicled; flowers aggregated at the end of the branches; bracts small, lanceolate, acuminate; lower pedicels 1 in. long. Perianth slightly curved, $1\frac{1}{4}$ in. long; segments brick-red, as long as the tube, with a narrow orange margin. Stamens included. Capsule oblong, 1 in. long, transversely rugose. Seeds ovoid, with a wing $\frac{1}{4}$ in. broad.

Mozamb. Dist. German East Africa: Kilimanjaro; at Rombo, 4000–5000 ft., *Volkens*, 404!

No specimen at Kew.

21. **A. Schimperi,** *Todaro, Hort. Bot. Panorm.* i. 70, *t.* 16. Caudex short, simple. Leaves densely rosulate, ovate-lanceolate, 1–$1\frac{1}{2}$ ft. long, 6–7 in. broad low down, glaucous green, distinctly lineate, obscurely spotted, concave above the middle, furnished with a thin reddish horny border; teeth crowded, irregular, minute, deltoid. Peduncle stout, 2–3 ft. long, much branched. Raceme short, crowded; pedicels 1–$1\frac{1}{4}$ in. long; bracts ovate-lanceolate, $\frac{1}{2}$ in. long. Perianth bright red, 18–21 lin. long, constricted above the ovary; segments rather shorter than the tube. Stamens slightly exserted. Capsule oblong-cylindrical, nearly 1 in. long.—Baker in Journ. Linn. Soc. xviii. 159; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 70, 110. *A. lineata*, var. *latifolia*, A. Br. in Ind. Sem. Hort. Berol. 1869, 7.

Nile Land. Eritrea: near Halai, 8400 ft., *Schweinfurth*, 152! Kohaito Plateau, 8400–8700 ft., *Schweinfurth*, 153! Saganeiti, in the Goua Gorge, near Addingfou, *Schweinfurth & Riva*, 722! 1330!

Introduced into cultivation in 1869.

22. **A. concinna,** *Baker.* Caudex short, simple. Leaves laxly rosulate, lanceolate, 3–4 in. long, 1 in. broad low down, tapering gradually to the channelled recurved tip, green on both surfaces with copious white blotches, not lineate; marginal teeth large, close, deltoid. Peduncle simple, compressed, rather longer than the leaves. Raceme oblong, moderately dense, 2 in. long; pedicels short, ascending; bracts lanceolate, as long as the pedicels. Perianth bright red, 1 in. long; tube very short. Stamens as long as the perianth.

Mozamb. Dist. Zanzibar, cultivated specimen, *Kirk!*

Described from a plant that flowered at Kew, April 1895.

23. **A. zebrina,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 264. Caudex simple, $\frac{1}{2}$ ft. long. Leaves densely rosulate, spreading, lanceolate, $\frac{1}{2}$–1 ft. long, 1–2 in. broad low down, glaucous, copiously spotted with white on both sides; marginal teeth deltoid, $\frac{1}{8}$–$\frac{1}{6}$ in. long. Peduncle 3–4 ft. long including the inflorescence, panicled; racemes lax, cylindrical, $\frac{1}{2}$–1 ft. long; pedicels $\frac{1}{4}$–$\frac{1}{2}$ in. long; bracts small, lanceolate. Perianth brick-red, $\frac{3}{4}$–1 in. long; tube short. Stamens as long as the perianth; style exserted. Capsule oblong-trigonous, 1 in. long.—Baker in Journ. Linn. Soc. xviii. 167.

Lower Guinea. Angola: Barra do Bengo, Loanda, and Lebongo, *Welwitsch*, 3720! 3721! 3722! 3724! 3725!

24. **A. hereroensis,** *Engl. Jahrb.* x. 2. Caudex short. Leaves densely rosulate, lanceolate-deltoid, 10 in. long, 2 in. broad at the base, narrowed gradually to the apex; marginal teeth not crowded, spreading, deltoid, $\frac{1}{8}$ in. long. Peduncle forked, with inflorescence 3 ft. long; branches densely flowered at the apex; pedicels 1 in. or more long; bracts ovate-lanceolate, $\frac{1}{3}$–$\frac{1}{2}$ in. long. Perianth cylindrical, 1 in. long, not constricted above the ovary; segments as long as the tube. Stamens just exserted.—Schinz in Bull. Herb. Boiss. iv. App. iii. 39.

Lower Guinea. Hereroland: near Usakos, 2700 ft., *Marloth*, 1438, *Schinz*, 346, *Fleck*.

No specimen at Kew.

25. **A. agavefolia,** *Todaro, Hort. Bot. Panorm.* i. 85, *t.* 23. Caudex short, simple. Leaves densely rosulate, lanceolate, $1\frac{1}{2}$ ft. long, 4–$4\frac{1}{2}$ in. broad low down, thin for the genus, channelled the whole length down the face, green, obscurely lineate, furnished with scattered small oblong white spots; margin slender, reddish-white, with moderately large deltoid teeth. Peduncle 3 ft. long, with about 5 branches. Racemes oblong, moderately dense, 3–4 in. long; pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long; bracts lanceolate, as long as the pedicels. Perianth red, $1\frac{1}{4}$ in. long, slightly constricted above the ovary; segments as long as the tube. Stamens slightly exserted.—Baker in Journ. Linn. Soc. xviii. 166.

Nile Land. Eritrea: in the neighbourhood of Acrur, 6300 ft., *Schweinfurth & Riva*, 1342!

Cultivated in the Palermo Botanic Garden since 1879.

26. **A. macrocarpa,** *Todaro, Hort. Bot. Panorm.* i. 36, *t.* 9. Caudex very short, simple. Leaves densely rosulate, ovate-lanceolate, about 1 ft. long, 3–4 in. broad low down, light green, not lineate, decorated with copious large oblong whitish irregularly seriate blotches; marginal teeth small, crowded, deltoid, tipped with red-brown. Peduncle forked, 2 ft. long. Racemes lax, cylindrical, the end one $\frac{1}{2}$ ft. long; lower pedicels $\frac{1}{2}$ in. long; bracts small, lanceolate. Perianth bright red, $1\frac{1}{4}$ in. long, much constricted above the ovary; segments shorter than the tube. Stamens as long as the perianth. Capsule oblong-cylindrical, nearly 2 in. long.—Baker in Journ. Linn. Soc. xviii. 163; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 69, 110.

Nile Land. Eritrea: Mount Alam Kale, *Schweinfurth & Riva*, 1488! 1757! Ambelaco, 6500 ft., *Schweinfurth*, 157! Geleb, Amba, 7000 ft., *Schweinfurth & Riva*, 1377! 1436!

Introduced into cultivation by Schimper in 1870.

27. **A. commutata,** *Todaro, Hort. Bot. Panorm.* i. 75, *t.* 18. Acaulescent. Leaves densely rosulate, oblong-lanceolate, 10–12 in. long, 2–3 in. broad low down, green, obscurely lineate, copiously spotted with white; marginal teeth large, deltoid-cuspidate, tipped with brown. Peduncle branched, 2–3 ft. long. Racemes 3–6 in. long, cylindrical, lax in the lower part; pedicels $\frac{1}{2}$–$\frac{3}{4}$ in. long; bracts small, lanceolate. Perianth bright red, 1–$1\frac{1}{2}$ in. long, constricted above the ovary;

segments shorter than the tube. Stamens as long as the perianth.—Baker in Journ. Linn. Soc. xviii. 165; Engl. Hochgebirgsfl. Trop. Afr. 164.

Nile Land. Mountains of Abyssinia, alt. 6000 ft., *Schimper*, 798.

No specimen in the Kew Herbarium.

Introduced into cultivation in Europe in 1878.

The native country of the allied *A. Paxii*, Terrac. in Boll. Ort. Palerm. i. (1897) 68, is unknown.

28. **A. obscura,** *Miller, Gard. Dict. edit.* viii. *No.* 6. Stem $\frac{1}{2}$–1 ft. long below the rosette of leaves. Leaves 15–30 in a dense rosette, lanceolate, 1 ft. long, 2–3 in. broad, lineate and copiously spotted; marginal teeth deltoid-cuspidate, $\frac{1}{12}$–$\frac{1}{8}$ in. long. Peduncle simple or forked, $1\frac{1}{2}$–2 ft. long. Raceme dense, cylindrical, $\frac{1}{2}$–1 ft. long; lower pedicels 1–$1\frac{1}{2}$ in. long; bracts deltoid-cuspidate, much shorter than the pedicels. Perianth bright red, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long; segments shorter than the tube. Stamens slightly exserted.—Schinz in Bull. Herb. Boiss. iv. App. iii. 39; Baker in Fl. Cap. vi. 314.

Lower Guinea. German South-west Africa: Amboland; Oshando, *Schinz*, 345.

Also in South Africa.

No specimen from Tropical Africa at Kew.

29. **A. platyphylla,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 264. Caudex simple, $\frac{1}{2}$–1 ft. long. Leaves densely rosulate, ovate-lanceolate, acuminate, glaucous green, densely lineate and spotted with white, $\frac{1}{2}$–1 ft. long, $2\frac{1}{2}$–3 in. broad low down; marginal teeth crowded, horny, deltoid, $\frac{1}{8}$ in. long. Peduncle 3–4 ft. long including the panicled inflorescence; racemes lax, cylindrical, $\frac{1}{2}$–1 ft. long; pedicels $\frac{1}{2}$ in. long; bracts lanceolate. Perianth red, $1\frac{1}{4}$ in. long; tube short. Stamens not exserted.—Baker in Journ. Linn. Soc. xviii. 167.

Lower Guinea. Angola: Pungo Andongo; frequent in dry thickets, *Welwitsch !*

No specimen at Kew.

30. **A. tenuifolia,** *Lam. Encyc.* i. 87? Caudex short, simple. Leaves densely rosulate, lanceolate, 12–15 in. long, 2–$2\frac{1}{2}$ in. broad below the middle, narrowed gradually to the apex, pale green, not lineate, $\frac{1}{8}$–$\frac{1}{6}$ in. thick in the middle, flat below the tip, tinged with red-brown, variegated with copious small confluent oblong whitish blotches; marginal teeth crowded, unequal, small, deltoid. Flowers unknown.—Baker in Journ. Linn. Soc. xviii. 163.

Mozamb. Dist. German East Africa: Zanguebar, *Kirk !*

Described from a living plant sent to Kew in 1877.

No specimen in the Kew Herbarium.

31. **A. Hildebrandtii,** *Baker in Bot. Mag. t.* 6981. Leaves laxly disposed on a simple erect stem $1\frac{1}{2}$–2 ft. long, lanceolate, amplexicaul, under 1 ft. long, $1\frac{1}{2}$–2 in. broad low down, glaucous green, with a few white spots; marginal teeth small, deltoid-cuspidate. Peduncle $1\frac{1}{2}$ ft. long including the panicle produced from the axis of one of the upper

leaves. Racemes many, rather lax, 3–6 in. long; pedicels spreading or cernuous, $\frac{1}{4}$ in. long; bracts lanceolate, minute. Perianth under 1 in. long, bright red; segments scarcely longer than the tube; inner reddish-yellow, with a green keel. Stamens and style slightly exserted.

East Tropical Africa. Without locality, cultivated specimen, *Hildebrandt!*

Described from a plant collected by Dr. Hildebrandt in East Tropical Africa, which flowered at Kew in July 1887, and was received from the Berlin Botanic Garden in 1882.

32. **A. penduliflora,** *Baker in Gard. Chron.* 1888, iv. 178. Stem simple, erect, $\frac{1}{2}$ in. diam. Leaves laxly disposed, spreading, ensiform, about 1 ft. long, 1–$1\frac{1}{4}$ in. diam. low down, plain green, nearly flat on the face; marginal teeth small, distant, deltoid-cuspidate. Peduncle simple, cernuous, $\frac{1}{2}$ ft. long, produced from the axis of one of the upper leaves. Raceme short, dense; pedicels $\frac{1}{2}$ in. long; bracts small, lanceolate. Perianth pale yellow tipped with green, about 1 in. long; segments less than half as long as the tube. Stamens as long as the perianth.

Mozamb. Dist. Zanzibar, cultivated specimen, *Kirk!*

Described from a plant that flowered at Kew, August 1888.

33. **A. confusa,** *Engl. Pfl. Ost-Afr. C.* 141. Stems branched, decumbent; branches intertangled with the main stem. Leaves laxly disposed, lanceolate with a clasping base, 7–8 in. long, under 1 in. broad; teeth small, distant, deltoid, spreading. Inflorescence panicled; branches arcuate-ascending; racemes 3–4 in. long; bracts small, lanceolate, scariose; pedicels ascending, $\frac{1}{2}$ in. long. Perianth red-yellow, above 1 in. long. Capsule oblong, not rugose, $\frac{1}{2}$ in. long. Seeds slightly compressed, narrowly winged.

Mozamb. Dist. German East Africa: Kilimanjaro, at Lake Chala, 3000 ft., *Volkens*, 410! 1780!

No specimen at Kew.

34. **A. Barteri,** *Baker in Journ. Linn. Soc.* xviii. 168. Whole plant 3 ft. high. Leaves ensiform, $1\frac{1}{2}$–2 ft. long, $2\frac{1}{2}$–3 in. broad low down, pale green with white spots; marginal teeth close, large, deltoid. Panicle $1\frac{1}{2}$ ft. long; racemes moderately dense, $\frac{1}{2}$–1 ft. long; pedicels ascending, the lower $\frac{1}{2}$–$\frac{3}{4}$ in. long; bracts small, lanceolate. Perianth $1\frac{1}{4}$ in. long, red with a green tip; segments half as long as the slender tube. Stamens as long as the perianth.

Upper Guinea. Niger Territory: Nupe, *Barter*, 1502! Lagos, much planted for medical use, *Millen*, 172!

Introduced into cultivation at Kew in 1892.

35. **A. constricta,** *Baker in Journ. Linn. Soc.* xviii. 168. Leaves ensiform, $1\frac{1}{2}$ ft. long, 2 in. broad low down; marginal teeth moderately large, rather distant, deltoid-cuspidate. Racemes moderately dense, secund, cylindrical, finally 1 ft. long; lower pedicels $\frac{1}{2}$ in. long; bracts lanceolate, minute. Perianth bright red, $1\frac{1}{2}$ in. long, distinctly con-

stricted above the ovary; tube longer than the segments. Stamens as long as the perianth. Capsule oblong-trigonous, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long.

Mozamb. Dist. Portuguese East Africa: at Sena and Lupata, on the River Zambesi, *Kirk!*

36. **A. brachystachys,** *Baker in Bot. Mag. t.* 7399. Caudex long, slender, simple. Leaves densely rosulate, ensiform, 18–21 in. long, 2 in. broad at the base, bright green, very smooth, unspotted; marginal teeth middle-sized, deltoid, spreading. Peduncle simple, flexuose, as long as the leaves. Raceme oblong-cylindrical, dense, $\frac{1}{2}$ ft. long; pedicels ascending, the lower 1 in. long; bracts orbicular, $\frac{1}{2}$ in. long, pale green, with 5–7 distinct brown stripes. Perianth pale red, tipped with green, $1\frac{1}{4}$ in. long; segments as long as the tube. Stamens shortly exserted.

Mozamb. Dist. Zanzibar, cultivated specimens, *Kirk!*

Described from a plant that flowered at Kew, January 1894.

37. **A. Rivæ,** *Baker.* Leaves long, ensiform, 3 in. broad low down, thick, rigid; marginal teeth deltoid, horny, $\frac{1}{6}$ in. long, moderately close. Peduncle long, terete. Inflorescence panicled; branches 4, erecto-patent; racemes lax, cylindrical, 4–5 in. long; bracts very small, ovate, cuspidate; pedicels ascending, $\frac{1}{4}$–$\frac{1}{3}$ in. long. Perianth 1 in. long; segments linear, as long as the cylindrical tube. Stamens included.

Nile Land. Somaliland: Gobbo Duaya, *Riva,* 1509!

No specimen at Kew.

38. **A. vera,** *Linn., var.* **æthiopica,** *Schweinf. in Bull. Herb. Boiss.* ii. *App.* ii. 61. Caudex short, usually simple. Leaves densely rosulate, ensiform, unspotted when mature, above 1 ft. long, $2\frac{1}{2}$ in. broad low down; marginal teeth distant, deltoid. Peduncle forked, 2–3 ft. long; racemes dense, about 4 in. long; rhachis glabrous; pedicels erecto-patent, lower $\frac{1}{2}$–$\frac{3}{4}$ in. long; bracts small, ovate. Perianth 1 in. long; tube oblong, constricted above the ovary. Stamens not exserted. Capsule oblong, glabrous, shortly stipitate.

Nile Land. Abyssinia: Tigre; near Abba Gerima, 8000 ft., *Schimper,* 927!

Var. *puberula,* Schweinf. loc. cit. Leaves 20 in. long, 4 in. broad, green or tinged with red; marginal teeth $\frac{1}{8}$–$\frac{1}{5}$ in. long. Rhachis of raceme pruinose and rather rough; pedicels nearly 1 in. long; bracts half as long as the pedicels. Perianth yellow, above 1 in. long, with scattered hairs outside; tube rather longer than the segments. Stamen slightly exserted. Capsule oblong-cylindrical, pulverulent with scattered hairs.

Nile Land. Eritrea: Barasio Valley, 5000 ft., *Schweinfurth,* 2076.

No specimen at Kew.

39. **A. percrassa,** *Todaro, Hort. Bot. Panorm.* i. 81, *t.* 21. Subacaulescent. Leaves densely rosulate, lanceolate-ensiform, sometimes spotted, deep green, reaching a length of $2\frac{1}{2}$ ft. and a breadth of 6–7 in. low down, narrowed gradually to the point; marginal teeth small, deltoid, brown and horny at the tip. Peduncle branched, 3 ft. long, including the inflorescence; racemes cylindrical, above 1 ft. long; rhachis pubescent; pedicels $\frac{1}{4}$–$\frac{1}{2}$ in. long; bracts ovate, much longer

than the pedicels. Perianth above 1 in. long, red; tube as long as the segments. Stamens as long as the perianth. Capsule oblong-cylindrical, pubescent, under 1 in. long.—Schweinf. in Bull. Herb. Boiss. ii. App. ii. 62. *A. abyssinica*, var. *percrassa*, Baker in Journ. Linn. Soc. xviii. 175; Engl. Hochgebirgsfl. Trop. Afr. 164.

Nile Land. Eritrea: Selet Valley; below Acrur, 5200 ft., *Schweinfurth*, 1804, and below Saganeiti, 5500 ft., *Schweinfurth & Riva*, 1664! Ginda Valley, 3000–4000 ft., *Schweinfurth & Riva*, 2229! 2291! Barasio Valley, *Schweinfurth*, 2077.

Introduced into cultivation in 1873.

Var. *albopicta*, Schweinf. in Bull. Herb. Boiss. ii. App. ii. 64, is a form with the leaves persistent and spotted with white all over the surface.

Nile Land. Eritrea: Ginda Valley, 3900 ft., *Schweinfurth*, 1846, 1847.

No specimen at Kew.

A variety is also found in Arabia.

40. **A. Volkensii,** *Engl. Pfl. Ost-Afr. C.* 141. Caudex 12–15 ft. long. Leaves lanceolate, above 1 ft. long, 3 in. broad low down; teeth small, deltoid, moderately close, slightly curved. Inflorescence panicled; branches arcuate-ascending, $\frac{1}{2}$ ft. long, densely flowered at the apex; bracts very small; lower pedicels $\frac{1}{4}$ in. long, articulated at the apex. Perianth straight, $\frac{5}{8}$ in. long. Segments red on the back, orange inside and on the edge. Filaments 5–6 times the length of the oblong anthers.

Mozamb. Dist. German East Africa: Kilimanjaro; Marangu, 4500–5000 ft., *Volkens*, 406! and by the River Himo below Marangu, 3000 ft., *Volkens*, 1757!

No specimen at Kew.

41. **A. angolensis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 263. Subacaulescent. Leaves densely rosulate, ensiform, 2 ft. long, $1\frac{1}{2}$–2 in. broad low down, unspotted; marginal teeth spreading, deltoid, $\frac{1}{12}$ in. long. Peduncle very short, much compressed, 2 ft. long, including the inflorescence. Racemes 1–3, dense, oblong, 3–4 in. long; pedicels $\frac{1}{8}$–$\frac{1}{4}$ in. long; bracts ovate, acute, lower $\frac{1}{4}$–$\frac{1}{3}$ in. long; central flowers spreading, lower deflexed. Perianth yellow, under 1 in. long; tube very short. Stamens nearly as long as the perianth.—Baker in Journ. Linn. Soc. xviii. 162.

Lower Guinea. Angola: Barra do Bengo; on wooded hills, *Welwitsch*, 3728!

42. **A. palmiformis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 263. A shrub 3–5 ft. high, with a simple or forked trunk. Leaves densely rosulate, glaucous green, unspotted, ensiform, 1 ft. or more long, 21–24 lin. broad low down; marginal teeth deltoid, horny, crowded, $\frac{1}{6}$ in. long. Peduncle simple or forked; racemes moderately dense, cylindrical, 6–8 in. long; pedicels $\frac{1}{4}$–$\frac{1}{2}$ in. long; bracts minute, ovate, acute. Perianth under 1 in. long; tube short. Stamens as long as the perianth.—Baker in Journ. Linn. Soc. xviii. 173.

Lower Guinea. Angola: Huilla: Morro de Lopollo, subtemperate region, in high stony woods, *Welwitsch*, 3726!

43. **A. Schœlleri,** *Schweinf. in Bull. Herb. Boiss.* ii. *App.* ii. 107. Subacaulescent. Leaves about 10, densely rosulate, lanceolate, 1½–2 ft. long, 5–6 in. broad low down, ⅔ in. thick, glaucous, recurved, irregularly slightly repand; marginal teeth 30–35 on a side, robust, reddish. Peduncle 2–3 ft. long. Raceme simple, dense, 6–10 in. long; pedicels ⅛ in. long; bracts large, ovate. Perianth in a young state cut more than half-way down.

Nile Land. Eritrea: Kohaito Plateau, 8400–8700 ft., *Schweinfurth*, 158!

44. **A. Schweinfurthii,** *Baker in Journ. Linn. Soc.* xviii. 175. Leaves ensiform, 1–1½ ft. long, 2 in. broad low down, narrowed gradually to a long point; marginal teeth close, large, deltoid, tipped with brown. Peduncle stout, compressed, branched, 2 ft. long. Racemes cylindrical, moderately dense, the end one 6–9 in. long; lower pedicels ⅓–½ in. long; bracts small, ovate or lanceolate. Perianth pale red, 10–12 lin. long; tube short, campanulate. Stamens as long as the perianth.

Nile Land. British East Africa: Niamniam; at Makporru Hill, *Schweinfurth*, ser. iii. 167!

45. **A. littoralis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 263. A shrub 6–10 ft. high, with a usually simple trunk, as thick as a man's arm, rarely thicker. Leaves densely rosulate, unspotted, ensiform, acuminate, 2–3 ft. long, 2–2½ in. broad low down; marginal teeth spreading, horny, deltoid, $\frac{1}{12}$ in. long. Peduncle panicled, 4–5 ft. long, including the inflorescence; racemes cylindrical, moderately dense, 1 ft. long; pedicels ¼–⅓ in. long; bracts ovate-lanceolate, rather longer than the pedicels. Perianth 1 in. long; tube very short. Stamens as long as the perianth.—Baker in Journ. Linn. Soc. xviii. 174.

Lower Guinea. Angola: Loanda; frequent through the coast region, *Welwitsch*, 3727!

46. **A. cryptopoda,** *Baker in Journ. Bot.* 1884, 52. Leaves ensiform, 1½–2 ft. long, 3 in. broad low down; marginal teeth deltoid, crowded, spreading, medium-sized. Peduncle forked, moderately stout, terete. Racemes cylindrical, ½–1 ft. long; pedicels ascending, lower ¼–⅓ in. long; bracts ovate, as long as the pedicels. Perianth bright red, 1 in. long; tube very short. Stamens as long as the perianth. Capsule oblong-trigonous, under 1 in. long.

Mozamb. Dist. Portuguese East Africa: banks of the Zambesi, opposite Sena, *Kirk*, 96! Nhaoridue, on sterile rocky hills, *Menyharth*, 1238!

47. **A. abyssinica,** *Lam. Encyc.* i. 86 (*excl. syn.*). Caudex short, simple. Leaves densely rosulate, ensiform, deep green, often spotted when young, 1½–2 ft. long, 3–4 in. broad low down; marginal teeth large, deltoid, tipped with brown. Peduncle branched, 1½–2 ft. long; racemes dense, oblong, 3–4 in. long; lower pedicels ¾–1 in. long; bracts small, ovate. Perianth yellow, 1 in. long; segments twice as long as the oblong tube. Stamens about as long as the perianth. Capsule oblong-trigonous, 1 in. long, obscurely stipitate.—Roem. & Schultes, Syst. Veg. vii. 695; Salm-

Dyck, Aloe sect. xviii. fig. 1; Kunth, Enum. iv. 521; A. Rich. Tent. Fl. Abyss. ii. 324; Baker in Journ. Linn. Soc. xviii. 174; Engl. Hochgebirgsfl. Trop. Afr. 165; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 66, 110; *A. vulgaris*, var. *abyssinica*, DC. Plantes Grasses, sub t. 27.

Nile Land. Nubia: between Atbara and the Red Sea, *Schweinfurth*, 19! between Suakin and Berber; at Singat, *Schweinfurth*, 206! and at Wady Sarranib, *Schweinfurth*, 274! 275! Eritrea: Haddas Valley, near Mahio, 3200 ft., *Schweinfurth*, 155! Kohaito Plateau, 8400–8700 ft., *Schweinfurth*, 156! Geleb, 9400 ft., *Schweinfurth*, 1234! 1430! 1796! near Acrur, 9400 ft., *Schweinfurth & Riva*, 1350! 1696! 1797! and on the Mareb Plateau, *Steudner*, 476! Abyssinia, *Dillon & Petit*, 50!

Var. *Peacockii*, Baker in Journ. Linn. Soc. xviii. 175. Leaves lanceolate ensiform, 18–21 in. long, 5–6 in. broad low down. Flowers bright yellow. *A. elegans*, Todaro, Hort. Bot. Panorm. ii. 25, t. 29.

Nile Land. Abyssinia.

Cultivated by the late Mr. Peacock at Hammersmith, and by Todaro at Palermo, raised from seeds received from Schimper.

No specimen in the Kew Herbarium.

A. Deleuili, Hort., is a garden hybrid raised by Deleuil of Hyères by crossing this species with the South African *A. ferox*.

48. **A. Camperii,** *Schweinf. in Bull. Herb. Boiss.* ii. *App.* ii. 67, 110. Subacaulescent, glabrous in all its parts. Leaves densely rosulate, lanceolate-ensiform, pale green, subglaucous, unspotted, $1\frac{1}{2}$–2 ft. long, 5–6 in. broad low down, tinged with purple at the base and apex; marginal teeth large, curved, not crowded. Peduncle 3 ft. long, much compressed, branched; racemes short, very dense; pedicels, bracts and perianth as in *A. abyssinica*. Capsule oblong-trigonous, under 1 in. long.

Nile Land. Eritrea: Kohaito Plateau, 8400–8700 ft., *Schweinfurth*, 154!

49. **A. crassipes,** *Baker in Journ. Linn. Soc.* xviii. 162. Leaves ensiform, in the only specimen seen 1 ft. long, under 1 in. broad low down; teeth large, distant, spreading, deltoid, rather hooked. Peduncle stout, $1\frac{1}{2}$ ft. long. Raceme moderately dense, cylindrical, $\frac{1}{2}$ ft. long, with 2 short branches at the base; pedicels ascending, the lower 1 in. long; bracts small, lanceolate. Perianth $1\frac{1}{4}$ in. long, slightly constricted above the ovary; tube short, campanulate. Stamens as long as the perianth.

Nile Land. Nubia: between Suakin and Berber, at Kishi, *Schweinfurth*, 3765!

50. **A. dichotoma,** *Linn. f. Suppl.* 206. Arborescent, much branched, reaching a height of 30–40 ft., with a trunk 3–4 ft. diam. Leaves in dense rosettes at the tip of the thick smooth branchlets, lanceolate, 8–12 in. long, 1–$1\frac{1}{4}$ in. broad, thick, glaucous, unspotted. Peduncle short, branched; racemes lax, 2–4 in. long; pedicels short, erecto-patent; bracts small, lanceolate. Perianth bright yellow, $\frac{3}{4}$–1 in. long; tube campanulate. Stamens much exserted.—Thunb. Diss. Aloe No. 1; Fl. Cap. ed. Schult. 309; Paterson's Travels, t. 2–5; Kunth, Enum. iv. 534; Dyer in Gard. Chron. 1874, i. 567, figs. 118, 121; Baker

in Journ. Linn. Soc. xviii. 178, and in Fl. Cap. vi. 325; Schinz in Bull. Herb. Boiss. iv. App. iii. 38.

Lower Guinea. German South-west Africa: Hereroland; near Usakos, 2700 ft., *Marloth*, 1439.

Also south of the Tropic in Namaqualand.

Imperfectly known Species.

51. **A. megalacantha,** *Baker*. Leaves lanceolate, $1\frac{1}{2}$ ft. or more long, 3–4 in. broad low down, tapering gradually to the point, thick, rigid; marginal teeth large, spreading, crowded, horny, deltoid, $\frac{1}{3}$ in. long. Flowers only seen detached. Perianth cylindrical, 1 in. long; tube short, campanulate; segments long, linear. Stamens included. Style exserted.

Nile Land. Somaliland, *Riva*, 905!

No specimen at Kew.

7. **HAWORTHIA,** Duval; Benth. et Hook. f. Gen. Pl. iii. 777.

Perianth-tube oblong; limb bilabiate; segments oblong, the 3 upper reflexing more than the 3 lower. Stamens 6, shorter than the perianth, hypogynous; anthers oblong, versatile, dehiscing down the face. Ovary ovoid, 3-celled; ovules many in a cell; style subulate; stigma small, capitate. Capsule loculicidally 3-valved. Seeds much compressed, not winged; testa black; albumen fleshy; embryo straight.—Leaves fleshy, usually congested into a basal rosette, often marked with lines and white chalky dots. Peduncle simple or forked. Flowers small, white, usually laxly racemose.

Species 60, the others all South African.

1. **H. angolensis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 263. Rootstock thickened, covered with ovate-lanceolate scales $1\frac{1}{4}$–$1\frac{1}{2}$ in. long. Leaves 6–12 in a dense rosette, erect, linear, glaucous, flattish, 2–3 in. long; marginal teeth minute. Peduncle slender, $\frac{1}{2}$ ft. long. Raceme lax, subspicate, 4–5 in. long; flowers erecto-patent; bracts ovate-cuspidate. Perianth $\frac{1}{2}$ in. long; lobes keeled with green, much shorter than the tube.—Baker in Journ. Linn. Soc. xviii. 210.

Lower Guinea. Angola: Huilia; subtemperate region, in sandy woods, *Welwitsch!*

8. **SCHIZOBASIS,** Baker; Benth. et Hook. f. Gen. Pl. iii. 786.

Perianth campanulate, polyphyllous, persistent; segments oblong, subequal, spreading. Stamens 6, shorter than the perianth, inserted at the base of the segments; filaments filiform or slightly flattened, glabrous; anthers oblong, versatile, dehiscing longitudinally. Ovary globose, 3-celled; ovules few in a cell; style subulate; stigma minute,

3-lobed. Capsule globose, dehiscing loculicidally. Seeds 1–3, angled; testa lax, black; albumen fleshy; embryo nearly as long as the albumen.—Rootstock a comparatively large bulb. Leaves all basal, not contemporary with the flowers. Stems much branched, straight or flexuose. Flowers minute, white, racemose or terminal on the branchlets.

Species 5, the others South African.

1. **S. angolensis,** *Baker in Trans. Linn. Soc. ser. 2, Bot.* i. 255. Bulb globose, 1–1½ in. diam.; outer tunics brown, membranous. Leaves unknown. Peduncle slender, naked, straight, erect, ½ ft. long. Panicle corymbose, 1 ft. long; branches and branchlets long, straight, slender; pedicels articulated at the apex; bracts minute, deltoid. Perianth ⅙ in. long; segments oblong, white with a brown keel. Filaments slightly flattened; anthers shorter than the filaments.

Lower Guinea. Angola: Pungo Andongo; in rocky ground, 2400–3800 ft., *Welwitsch*, 3866!

9. **ERIOSPERMUM,** Jacq.; Benth. et Hook. f. Gen. Pl. iii. 786.

Perianth campanulate, polyphyllous, persistent; segments oblong or linear-oblong, subequal, spreading. Stamens 6, shorter than the perianth, attached to the base of the segments; filaments filiform or flattened; anthers oblong, small, basifixed, dehiscing longitudinally. Ovary sessile or subsessile, globose, 3-celled; ovules 2 or few in a cell; style short, subulate; stigma capitate, minute. Capsule with 3 persistent spreading or reflexed loculicidal valves. Seeds oblong-triquetrous, densely hairy; albumen fleshy; embryo long, cylindrical.—Rootstock a large irregularly-shaped tuber. Leaves usually solitary and not contemporary with the flowers, ovate or lanceolate. Inflorescence a simple raceme; pedicels articulated at the apex; bracts minute, membranous. Flowers small, white or yellow; segments with a 1-nerved brown keel.

Species 50, the others all South African.

Pedicels long.
- Peduncle long. Perianth ¼–⅓ in. long . . . 1. *E. elatum.*
- Peduncle short. Perianth smaller.
  - Leaf linear . . . . . 2. *E. stenophyllum.*
  - Leaf lanceolate.
    - Leaves not contemporary with flowers . . 3. *E. abyssinicum.*
    - Leaves contemporary with flowers.
      - Stamens short . . . . . 4. *E. bakerianum.*
      - Stamens more than half as long as the perianth 5. *E. bechuanicum.*
  - Leaf oblanceolate . . . . . 6. *E. andongense.*
  - Leaf cordate-orbicular . . . . . 7. *E. sphærophyllum.*
  - Leaf unknown . . . . . 8. *E. flexuosum.*

Pedicels short.
- Leaf linear . . . . . 9. *E. linearifolium.*
- Leaf lanceolate . . . . . 10. *E. triphyllum.*
- Leaf oblong-lanceolate . . . . . 11. *E. ophioglossoides.*
- Leaf oblong.

Leaf 1–2 in. long	12. *E. paludosum.*
Leaf 5–6 in. long	13. *E. Kirkii.*
Leaf cordate-ovate.	
Leaf under 1 in. long	14. *E. Currori.*
Leaf 3–4 in. long	15. *E. somalense.*
Leaf cordate-orbicular	16. *E. roseum.*

1. **E. elatum,** *Baker*. Tuber medium-sized. Leaf not seen, not contemporary with the flowers. Peduncle $1\frac{1}{2}$ ft. long. Raceme very lax, $\frac{1}{2}$ ft. long; pedicels ascending, the lower $1\frac{1}{2}$–2 in. long in the flowering stage. Perianth above $\frac{1}{4}$ in. long; segments linear, yellowish, keeled with pale brown. Stamens rather shorter than the perianth-segments; filaments filiform; anthers subglobose, minute. Capsule $\frac{1}{4}$–$\frac{1}{3}$ in. long; valves obovate, reflexing.

Mozamb. Dist. British Central Africa: Urungu; Fwambo, 5000–6000 ft., *Carson*, 16 of 1894 collection! *Carson*, 82 of 1892 collection!

2. **E. stenophyllum,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 261. Tuber depresso-globose, moderately large, densely crowned with bristles. Leaf solitary, linear, shortly petiolate, subcoriaceous, glabrous, 6–8 in. long, $\frac{1}{5}$–$\frac{1}{4}$ in. broad at the middle, narrowed gradually to the base. Peduncle slender, wiry, $\frac{1}{2}$ ft. long. Raceme lax, 5–6 in. long; pedicels ascending, the lower 3–$3\frac{1}{2}$ in. long; bracts very minute, ovate. Perianth $\frac{1}{6}$ in. long; segments oblong, white, with a red-brown keel. Stamens rather shorter than the perianth; filaments subulate; anthers subglobose, minute.

Lower Guinea. Angola: Pungo Andongo; in sandy ground on the banks of the River Cumanza, *Welwitsch*, 3758!

3. **E. abyssinicum,** *Baker in Journ. Linn. Soc.* xv. 263. Tuber globose, 1–$1\frac{1}{2}$ in. diam., crowned with copious fibres. Leaf lanceolate, not contemporary with the flowers, distinctly petiolate, subcoriaceous, glabrous, 5–6 in. long, $\frac{1}{4}$–$\frac{1}{2}$ in. broad at the middle, narrowed gradually to the apex and base. Peduncle wiry, 3–6 in. long. Raceme lax, 6–8 in. long; pedicels ascending, lower 2–3 in. long; bracts very minute. Perianth oblong, $\frac{1}{4}$ in. long; segments linear-oblong, white, with a pale brown keel. Stamens unequal, rather shorter than the perianth; filaments flattened; anthers subglobose. Capsule $\frac{1}{4}$ in. long, with obovate reflexing valves.—*Bulbine unifolia*, Schweinf. in. Pl. Callab. Exsic. No. 26.

Nile Land. Gallabat: banks of the River Gendua, *Schweinfurth*, 26! Jur: Jur Ghattas, *Schweinfurth*, 1924! ser. iii. 141! Seriba Kurshook Ali, *Schweinfurth*, 1724!

Mozamb. Dist. German East Africa: *Hannington!* British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 196! Zomba, 2500–3500 ft., *Whyte!* Mount Mlanje, *Scott-Elliot*, 8638!

An incomplete specimen collected in Nupe by Barter (1538) agrees with this as far as the material goes.

4. **E. bakerianum,** *Schinz in Verh. Bot. Ver. Prov. Brand.* xxxi. 215. Tuber globose, conical at the apex, $1\frac{1}{2}$ in. diam., its neck densely

clothed with fibres. Leaves 1–4, contemporary with the flowers, lanceolate, acute, erect, subcoriaceous, glabrous, 3–4 in. long. Raceme very lax, 4–6 in. long; pedicels ascending, lower 3 in. long. Perianth $\frac{1}{4}$ in. long; segments oblong, white with a red-brown keel. Filaments filiform, as long as the anthers. Style longer than the ovary. Seeds clothed with fine white hairs $\frac{1}{6}$ in. long.

Lower Guinea. German South-west Africa: Amboland; in sandy ground at Olukondo, *Schinz*, 25! 39! Oshiheke, *Schinz*, 17! Hereroland, *Belck*, 48, *Luderitz*, 26.

5. **E. bechuanicum,** *Baker.* Tuber not seen. Leaf contemporary with the flowers, firm, glabrous, lanceolate, acute, 2–3 in. long, sheathing the stem a little above the base, erect. Peduncle 2–3 in. long. Raceme many-flowered, 3–6 in. long; pedicels ascending; lower 3–4 in. long; bracts ovate, minute. Perianth campanulate, $\frac{1}{4}$ in. long; segments oblong, white, with a greenish-brown keel. Stamens unequal, more than half as long as the perianth; anthers small, oblong; filaments linear. Ovary ovoid; style as long as the ovary.

Mozamb. Dist. British Central Africa: Ngamiland; near Kwebe, *Lugard*, 80!

6. **E. andongense,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 261. Tuber globose, 1–1$\frac{1}{2}$ in. diam., crowned with bristles. Leaf solitary, not contemporary with the flowers, petiolate, subcoriaceous, oblanceolate, glabrous, 6–8 in. long, 1–1$\frac{1}{2}$ in. broad at the middle, narrowed gradually to the base. Peduncle wiry, 8–12 in. long. Raceme lax, 3–4 in. long; pedicels long, ascending. Perianth campanulate, $\frac{1}{6}$ in. long; segments linear-oblong, sulphur-yellow, with a purple keel. Stamens nearly as long as the perianth.

Lower Guinea. Angola: Pungo Andongo, *Welwitsch*, 3757!

7. **E. sphærophyllum,** *Baker.* Leaf single, contemporary with the flowers, clasping the base of the stem, suborbicular, subcoriaceous, glabrous, 1$\frac{1}{4}$–1$\frac{1}{2}$ in. broad. Peduncle very short. Raceme deltoid, many-flowered, 2–3 in. long; pedicels ascending; lower 1 in. long; bracts minute, ovate-lanceolate. Perianth oblong, $\frac{1}{4}$ in. long; segments oblong, white with a greenish-brown keel. Stamens unequal, nearly as long as the perianth; anthers globose; filaments dilated towards the base. Ovary globose; style as long as the ovary.

Mozamb. Dist. British Central Africa: Ngamiland; near Kwebe, *Lugard*, 78!

8. **E. flexuosum,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 261. Tuber globose, $\frac{3}{4}$–1 in. diam. Leaf unknown, not produced at the same time as the stem. Peduncle slender, 6–9 in. long. Raceme lax, 6–9 in. long; rhachis slender, flexuose; pedicels ascending, lower 2–3 in. long; bracts very minute, ovate, scariose. Perianth campanulate, $\frac{1}{4}$ in. long; segments linear, white, with a red-brown keel. Stamens

rather shorter than the perianth; filaments flattened; anthers subglobose, minute.—Engl. Hochgebirgsfl. Trop. Afr. 162.

Lower Guinea. Angola: Huilla; subtemperate region, 3800–5500 ft., *Welwitsch*, 3760!

9. **E. linearifolium,** *Baker*. Tuber not seen. Leaves 2, contemporary with the flowers, linear, glabrous, 2–3 in. long, $\frac{1}{12}$–$\frac{1}{8}$ in. broad. Peduncle $1\frac{1}{2}$–3 in. long. Raceme lax, few-flowered; pedicels ascending; lower $\frac{1}{2}$ in. long; bracts small, persistent, broadly ovate. Perianth oblong, $\frac{1}{4}$ in. long; segments oblong, white, with a brown keel. Stamens nearly as long as the perianth; anthers small, oblong. Style long.

Nile Land. British East Africa: Mbuyuni, common on dry sand, *Scott-Elliot*, 6203!

10. **E. triphyllum,** *Baker in Engl. Jahrb.* xv. 471. Tuber globose, under 1 in. diam., crowded with the fibrous relics of old leaves. Leaves 3–4, contemporary with the flowers, lanceolate, acute, erect, glabrous, narrowed to the base, 5–6 in. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad at the middle. Peduncle slender, shorter than the leaves. Raceme few-flowered, about 1 in. long; pedicels ascending, finally $\frac{1}{2}$ in. long; bracts minute, broadly ovate. Perianth $\frac{1}{6}$ in. long; segments white, tinged and keeled with red-brown. Stamens distinctly shorter than the perianth-segments; anthers much shorter than the filaments.

Nile Land. British East Africa: Ukamba; Kitui, *Hildebrandt*, 2651!

Mozamb. Dist. (?) Ligaijo, *Fischer*, 607!

11. **E. ophioglossoides,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 262. Tuber globose, crowned with a ring of the long matted fibrous relics of old leaves. Leaf solitary, shortly petiolate, oblong-lanceolate, acute, subcoriaceous, glabrous, 1–3 in. long, $\frac{1}{2}$–$\frac{5}{8}$ in. broad at the middle, rather rounded at the base. Peduncle stiffly erect, 5–6 in. long. Raceme lax, oblong, 3–4 in. long; pedicels erecto-patent, the lower $\frac{1}{2}$–$\frac{3}{4}$ in. long; bracts very minute, ovate, red-brown. Perianth campanulate, $\frac{1}{6}$ in. long; segments linear-oblong, white with a bright red-brown keel. Stamens rather shorter than the perianth; anthers minute; filaments subulate.—Engl. Hochgebirgsfl. Trop. Afr. 162.

Lower Guinea. Angola: Huilla; subtemperate region, in damp pastures, *Welwitsch*, 3759!

12. **E. paludosum,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 261. Tuber oblong or subglobose, $\frac{3}{4}$–1 in. diam., crowned with copious fibrous relics of old leaves. Leaves 2–3 to a tuber, contemporary with the flowers, shortly petiolate, oblong, acute, subcoriaceous, glabrous, cuneate at the base, 1–2 in. long, 6–9 lin. broad. Peduncle 4–6 in. long. Raceme lax, 3–4 in. long; rhachis flexuose; pedicels ascending, lower in fruit 1 in. long; bracts very minute, deltoid, clasping. Perianth $\frac{1}{6}$ in. long; segments oblong, white, with a red-brown keel. Stamens rather shorter than the perianth; filaments filiform; anthers minute.

Lower Guinea. Angola: Pungo Andongo; frequent in swamps, *Welwitsch*, 2761! 3763!

13. **E. Kirkii,** *Baker in Journ. Linn. Soc.* xv. 267. Tuber globose, 1 in. diam. Leaves 2 to a tuber, contemporary with the flowers, distinctly petiolate, oblong or oblong-lanceolate, acute, moderately firm, glabrous, 5–6 in. long, 1–2 in. broad at the middle. Peduncle slender, 6–9 in. long. Raceme moderately dense, 2–4 in. long; pedicels ascending, the lower $\frac{1}{2}$–1 in. long; bracts ovate-lanceolate, white, with a brown keel. Perianth $\frac{1}{4}$ in. long; segments linear-oblong, white, with a distinct brown keel. Stamens half as long as the perianth; filaments filiform; anthers subglobose, minute. Capsule $\frac{1}{3}$ in. long; valves obovate, reflexing.

Mozamb. Dist. Portuguese East Africa: on the Lower Zambesi; between Lupata and Sena, *Kirk!* and Shupanga, *Kirk!* British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 65! between Blantyre and Matope, *Scott!*

Var. *brevifolium*, Baker. Tube small. Leaves shorter and more coriaceous, 3 in. long by half as broad.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 195!

14. **E. Currori,** *Baker*. Tuber not seen. Leaf solitary, contemporary with the flowers, cordate-ovate, obtusely cuspidate, subcoriaceous, glabrous, under 1 in. long; petiole clasping the base of the peduncle. Peduncle very short. Raceme dense, $\frac{1}{2}$–$\frac{3}{4}$ in. long; pedicels erecto-patent, the lower $\frac{1}{3}$–$\frac{1}{2}$ in. long; bracts minute, ovate. Perianth oblong-cylindrical, $\frac{1}{4}$ in. long; segments linear-oblong, pinkish-white with a broad brown keel. Stamens half as long as the perianth. Style as long as the globose ovary.—*Scilla Currori*, Baker in Journ. Linn. Soc. xiii. 249.

Lower Guinea. Angola: without precise locality, *Curror*, 26!

15. **E. somalense,** *Schinz in Bull. Herb. Boiss.* iv. 416. Tuber not seen. Leaf solitary, contemporary with the scape, broadly ovate. cordate at the base, chartaceous, glabrous, 3–4 in. long, nearly 3 in. broad. Peduncle above 2 in. long. Raceme 3–4 in. long; lower pedicels spreading, $\frac{1}{2}$ in. long. Flowers not seen.

Nile Land. Somaliland: Abdallah, *Keller*, 172.

No specimen at Kew.

16. **E. roseum,** *Schinz in Bull. Herb. Boiss.* iv. *App.* iii. 38. Tuber globose; skin rose-red. Leaf solitary, contemporary with the flowers, cordate-suborbicular, cuspidate, glabrous, 2–3 in. long. Peduncle as long as the leaf. Raceme lax, many-flowered, $1\frac{1}{2}$–4 in. long; pedicels patent, $\frac{1}{5}$–$\frac{1}{2}$ in. long; bracts deltoid. Perianth campanulate, $\frac{1}{4}$ in. long; segments oblong, obtuse, with a broad rose-red keel. Stamens half as long as the perianth: filaments lanceolate.

Lower Guinea. Hereroland: Kaoko, between the Koiami and Omanis Rivers, *Belck*, 22. Great Namaqualand: Rehoboth, *Fleck*, 888.

Also found in Great Namaqualand south of the Tropic.

No specimen at Kew.

We have two additional species, one from Matabeleland, collected by the Rev. W. Elliott, and the other from Amboland, collected by Prof. Hans Schinz, of which the leaves are not known. Prof. Schinz (Bull. Herb. Boiss. iv. App. iii. 37) identifies a plant from Hereroland, collected by Stapff, doubtfully with *E. corymbosum*, Baker in Journ. Linn. Soc. xv. 266. Prof. Schinz mentions two other unnamed species from Hereroland, collected by Fleck and Luderitz.

10. **BULBINE**, Linn.; Benth. et Hook. f. Gen. Pl. iii. 784.

Perianth campanulate, polyphyllous, persistent; segments oblong, subequal, spreading. Stamens 6, shorter than the perianth, hypogynous or obscurely perigynous; filaments filiform, densely bearded; anthers oblong, versatile, dehiscing longitudinally. Ovary globose, sessile, 3-celled; ovules few in a cell; style short, subulate; stigma minute, capitate. Capsule loculicidally 3-valved. Seeds few, triquetrous; testa black; albumen fleshy; embryo nearly as long as the albumen.—Rootstock not bulbous. Acaulescent or with a short leafy stem. Leaves subulate or flat, usually fleshy. Inflorescence a simple raceme dense upwards; pedicels solitary articulated at the apex; bracts small, membranous, persistent. Flowers usually bright yellow; segments with a 1-nerved green keel.

Species 30, all the others South African, except 2, which inhabit Australia.

Leaves subulate, fleshy . . . . . 1. *B. asphodeloides.*
Leaves lanceolate, fleshy . . . . . 2. *B. alooides.*
Leaves oblong, coriaceous . . . . . 3. *B. platyphylla.*

1. **B. asphodeloides,** *Schultes f. Syst. Veg.* vii. 444. Rootstock a small globose tuber, with a dense tuft of slender root-fibres. Leaves 10–20 in a dense basal rosette, erect, subulate, ½–1½ ft. long. Peduncle shorter than the leaves. Raceme 3–6 in. long, very dense upwards; upper pedicels ascending, lower spreading, 6–9 lin. long; bracts lanceolate, protruding beyond the buds. Perianth bright yellow, ⅓ in. long; segments oblong, much imbricated. Capsule obovoid-trigonous, ¼–⅓ in. long. Seeds 3–4 in each cell.—Kunth, Enum. iv. 564; Baker in Journ. Linn. Soc. xv. 345; Engl. Hochgebirgsfl. Trop. Afr. 159. *B. abyssinica*, A. Rich. Tent. Fl. Abyss. ii. 334, t. 97. *Anthericum asphodeloides*, Linn. Sp. Plant. 311; Jacq. Hort. Vind. ii. 85, t. 181.

Nile Land. Abyssinia: Shire, *Quartin-Dillon & Petit*, 177! and without precise locality, *Schimper*, 505! Somaliland, *Mrs. Lort-Phillips!* British East Africa: Jur; Abu Guroon's Seriba, *Schweinfurth*, 1541! ser. iii. 137! Ukamba; very common, 6000 ft., *Scott-Elliot*, 6745! Kitui, *Hildebrandt*, 2638! 40–60 miles from the coast, *Johnston!*

Lower Guinea. Angola: Huilla and Pungo Andongo; temperate region, *Welwitsch*, 3774! 3775!

South Central. Lunda: Kamissamba, *Buchner*, 681.

Mozamb. Dist. German East Africa: Kilimanjaro, 10,000 ft., *Volkens*, 2029! British Central Africa: Nyasaland; Namasi River, *Cameron!* Blantyre, *Buchanan*, 48! Mount Sochi, *Scott-Elliot*, 8612! Mount Mlanje, *McClounie*, 53! and without precise locality, *Buchanan*, 1327!

Widely spread at the Cape.

2. **B. alooides,** *Willd. Enum. Hort. Berol.* 372? Leaves in a dense basal rosette, fleshy, lanceolate, 4–5 in. long. Peduncle longer than the leaves. Raceme simple, cylindrical, ½ ft. long, dense except towards the base; pedicels ¼–½ in. long; bracts small, lanceolate. Perianth bright yellow, ¼ in. long. Stamens more than half as long as the perianth. Style reaching to the tip of the perianth-segments.—Baker in Journ. Linn. Soc. xv. 348.

Mozamb. Dist. British Central Africa: Nyasaland; Mount Chiradzulu, *Meller!*

Is perhaps distinct from the Cape plant figured by Dillenius and in Bot. Mag. t. 1317, but our material is very scanty.

3. **B. platyphylla,** *Baker in Engl. Jahrb.* xv. 468. Rootstock thick, globose, crowned with numerous fibres. Leaves 10–12 superposed on a short stem, oblong, coriaceous, glabrous, 4–6 in. long, 1½–2 in. broad. Peduncle 1–1½ ft. long. Raceme cylindrical, nearly 1 ft. long; pedicels ascending, ¼–⅓ in. long; bracts minute. Perianth yellow, ⅕ in. long; segments oblong.

Mozamb. Dist. German East Africa: Uniamwezi; Gonda, *Böhm*, 21!

No specimen at Kew.

11. **ASPHODELUS,** Linn.; Benth. et Hook. f. Gen. Pl. iii. 782.

Perianth not cut down to the very base, as in *Anthericum;* segments 6, oblong, subequal, spreading from above the base. Stamens 6, shorter than the perianth, inserted at the base of the segments; filaments dilated and connivent at the base; anthers oblong, versatile, dehiscing longitudinally. Ovary sessile, globose, 3-celled; ovules 2 in a cell, collateral; style subulate, slightly declinate; stigma terminal, minute. Capsule loculicidally 3-valved. Seeds often solitary, angled; testa crustaceous, grey or black, rugose; albumen cartilaginous; embryo cylindrical.—Annual or perennial herbs. Rootstock not bulbous. Leaves all radical, subulate. Racemes simple or branched; pedicels solitary, articulated; bracts membranous. Flowers white; segments keeled with brown.

Species 6, natives of South Europe and the Mediterranean region, extending to Northern India, Nubia, and Mauritius.

1. **A. fistulosus,** *Linn. var.* **tenuifolius,** *Baker in Journ. Linn. Soc.* xv. 272. Annual. Leaves many in a dense basal rosette, subulate, erect, fistular, 6–9 in. long, tapering to the apex. Peduncle shorter than the leaves. Panicle much-branched; racemes lax, ascending; pedicels short, articulated at the middle; bracts small, membranous, ovate. Perianth ¼–⅓ in. long. Capsule globose, ⅛ in. diam.; valves transversely grooved.—*A. tenuifolius,* Cav. Anal. Cienc. Nat. iii. 46, t. 27, fig. 2; Icon. vi. 63, t. 587, fig. 2; Kunth, Enum. iv. 558. *A. intermedius,* Hornem. Hort. Hafn. Suppl. 131. *A. æstivus,* Reich. Pl. Crit. t. 451.

A. microcarpus, Reichb. Ic. Fl. Germ. t. 513, fig. 1116, non Viv. *A. parviflorus*, Wight, Ic. t. 2062.

Nile Land. Nubia: Berber, *Kotschy*, 356! 357! and without precise locality, *Bent!*

Also in the Canaries, Peninsular India, and Mauritius.

12. **ACROSPIRA**, Welw.; Benth. et Hook. f. Gen. Pl. iii. 787.

Perianth elongated, subpolyphyllous; segments lanceolate, subequal, ascending, 3–5-nerved on the back. Stamens 6, inserted at the base of the perianth-segments; filaments short, rather flattened; anthers large, linear, basifixed, spirally recurved at the tip when fading. Ovary subglobose, sessile; ovules many in a cell, superposed; style long, subulate, slightly declinate; stigma capitate. Fruit and seeds unknown.

Endemic. Monotypic.

1. **A. asphodeloides,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 255, *t.* 34, *figs.* 4–7. Rootstock thick, oblique; root-fibres many, slender. Leaves 5–6 in a radical rosette, firm, ensiform, glabrous, 2–3 ft. long, 1–1¼ in. broad low down. Peduncle very long, furnished with many reduced leaves. Racemes 1–1½ ft. long; simple or furnished with 1–2 short branches at the base; lower flowers 3–4 in a cluster; pedicels short, unequal; bracts small, ovate. Perianth white, 9–10 lin. long; segments $\frac{1}{12}$ in. broad. Anthers yellow, $\frac{3}{8}$–$\frac{1}{2}$ in. long.

Lower Guinea. Angola: Pungo Andongo; frequent on high rocky ground, *Welwitsch*, 3777! 3778! 3779!

13. **ANTHERICUM,** Linn.; Benth. et Hook. f. Gen. Pl. iii. 788.

Perianth persistent, polyphyllous; segments subequal, 3–5-nerved on the back, spreading from the base. Stamens 6, hypogynous, shorter than the perianth; filaments smooth or scabrous; anthers linear, basifixed, dehiscing down the face. Ovary globose, sessile; ovules few in a cell, superposed; style subulate; stigmas small, capitate. Capsule oblong-trigonous, not deeply lobed, loculicidally 3-valved. Seeds angular, not compressed; testa black, opaque; albumen cartilaginous; embryo cylindrical.—Rootstock not bulbous; root-fibres slender, often producing small tubers. Leaves in a basal rosette, linear. Inflorescence racemose, often panicled; pedicels usually articulated at the middle or apex; bracts persistent. Flowers small, white.

Species 100, cosmopolitan, concentrated in Tropical and South Africa.

Subgenus PHALANGIUM. Pedicels articulated at the middle. Filaments glabrous.

Leaves subterete.
- Raceme simple . . . . . 1. *A. ustulatum.*
- Racemes panicled . . . . . 2. *A. calyptrocarpum.*

Leaves linear, glabrous.
- Perianth $\frac{1}{12}$ in. long . . . . . 3. *A. inconspicuum.*

Perianth yellow, $\frac{1}{6}$ in. long . . . . . 4. *A. pumilum.*
Perianth $\frac{1}{4}$ in. long . . . . . 5. *A. tenellum.*
Perianth about $\frac{1}{3}$ in. long.
Anthers oblong, $\frac{1}{12}$ in. long.
Pedicels solitary . . . . . 6. *A. dissitiflorum.*
Lower pedicels 2-nate . . . . . 7. *A. subpetiolatum.*
Anthers linear-oblong, $\frac{1}{8}$ in. long.
Peduncle pubescent . . . . . 8. *A. pubirachis.*
Peduncle glabrous.
Pedicels very short.
Peduncle flattened, not acutely angled . 9. *A. Nyasæ.*
Peduncle acutely angled.
Peduncle very long . . . . 10. *A. pterocaulon.*
Peduncle shorter than the leaves . . 11. *A. anceps.*
Pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long . . . . . 12. *A. andongense.*
Anthers linear, $\frac{1}{6}$ in. long.
Peduncle short . . . . . 13. *A. limosum.*
Peduncle long.
Pedicels very short.
Root-fibres slender . . . . . 14. *A. rubellum.*
Root-fibres thick . . . . . 15. *A. campestre.*
Pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long.
Racemes simple . . . . . 16. *A. zanguebaricum.*
Racemes slightly compound . . . 17. *A. kemoense.*
Racemes 3–5, panicled . . . . 18. *A. nervosum.*
Anthers linear, $\frac{1}{4}$ in. long . . . . . 19. *A. acuminatum.*
Perianth $\frac{1}{2}$ in. or more long.
Peduncle short . . . . . 20. *A. nubicum.*
Peduncle long.
Peduncle terete or subterete.
Perianth-segments 3-nerved in the keel . 21. *A. Bragæ.*
Perianth-segments 5-nerved in the keel . 22. *A. matabelense.*
Peduncle flattened.
Leaves about 1 ft. long . . . . 23. *A. purpuratum.*
Leaves $1\frac{1}{2}$–2 ft. long . . . . . 24. *A. uyuiense.*
Leaves ensiform or lanceolate, glabrous.
Leaf solitary, cauline . . . . . 25. *A. monophyllum.*
Leaves 3–4 basal and 3–4 cauline . . . 26. *A. caulescens.*
Leaves all basal.
Racemes simple.
Leaves about 3 to a stem . . . . 27. *A. triphyllum.*
Leaves about 8 to a stem . . . . 28. *A. speciosum.*
Racemes panicled.
Anthers $\frac{1}{6}$ in. long.
Perianth $\frac{1}{4}$ in. long . . . . 29. *A. usseramense.*
Perianth $\frac{1}{2}$ in. long . . . . 30. *A. Buchanani.*
Anthers $\frac{1}{5}$ in. long . . . . 31. *A. milanjianum.*
Anthers $\frac{1}{4}$ in. long . . . . 32. *A. Giryamæ.*
Leaves oblong, glabrous.
Peduncle short . . . . . 33. *A. orchideum.*
Peduncle very long . . . . . 34. *A. superpositum.*
Leaves distinctly ciliated on the edge.
Anthers shorter than the filaments . . . 35. *A. benguellense.*
Anthers as long as the filaments . . . 36. *A. Stuhlmanni.*
Anthers longer than the filaments . . . 37. *A. venulosum.*

Leaves pubescent over the surface.
Leaves linear . . . . . 38. *A. Grantii.*
Leaves lanceolate.
Anthers $\frac{1}{8}$ in. long . . . . . 39. *A. arenarium.*
Anthers $\frac{1}{6}$ in. long . . . . . 40. *A. sphacelatum.*

Subgenus HOLOPODIUM. Flowers corymbose; pedicels not articulated.
Peduncle none.
Flowers 2–3 . . . . . 41. *A. angustifolium.*
Flowers 6–8 . . . . . 42. *A. humile.*
Peduncle shorter than the leaves.
Leaves glabrous . . . . . 43. *A. corymbosum.*
Leaves with a few long hairs . . . . . 44. *A. Jamesii.*
Peduncle as long as the leaves . . . . . 45. *A. gregorianum.*

Subgenus TRACHYANDRA. Pedicels solitary, articulated at the apex. Filaments scabrous.
Leaves glabrous.
Flowers white . . . . . 46. *A. arvense.*
Flowers yellow . . . . . 47. *A. flavoviride.*
Leaves pilose.
Peduncle very short . . . . . 48. *A. pyrenicarpum.*
Peduncle not very short.
Peduncle much shorter than the leaves . . . 49. *A. elongatum.*
Peduncle as long as the leaves.
Leaves subterete . . . . . 50. *A. Oatesii.*
Leaves narrowly linear.
Racemes short . . . . . 51. *A. Saltii.*
Racemes long . . . . . 52. *A. malosanum.*

Subgenus DILANTHES. Pedicels articulated at the middle; lower usually 3–4-nate. Filaments scabrous.
Lower pedicels solitary . . . . . 53. *A. taylorianum.*
Lower pedicels 3–4-nate.
Leaves glabrous.
Perianth-segments with a green keel . . . 54. *A. nidulans.*
Perianth-segments with a red-brown keel . . 55. *A. triflorum.*
Leaves pubescent.
Leaves 2–3 in. long . . . . . 56. *A. molle.*
Leaves above 1 ft. long . . . . . 57. *A. Whytei.*

1. **A. ustulatum,** *Welw. ex Baker in Trans. Linn. Soc. ser. 2, Bot.* i. 258. Rootstock slender, wide-creeping; neck crowned with a few fibres. Produced leaves 3, subterete, firm, glabrous, 6–7 in. long; outer rudimentary linear, coriaceous, transversely barred with black. Peduncle slender, terete, nearly as long as the leaves. Raceme lax, simple, 1–1½ in. long; pedicels $\frac{1}{6}$–$\frac{1}{4}$ in. long, articulated at the middle, the lower 2–3-nate; bracts lanceolate, red-brown, longer than the pedicels. Perianth $\frac{1}{3}$ in. long; segments oblong, with a many-nerved red-brown keel. Stamens much shorter than the perianth; anthers oblong, as long as the glabrous filaments.

Lower Guinea. Angola: Huilla and Pungo Andongo; in spongy bogs, *Welwitsch,* 3800! 3801!

2. **A. calyptrocarpum,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 258. Root-fibres many, cylindrical, fleshy; crown of the root densely setose. Leaves 1–2, terete, glabrous, 1 ft. or more long, very slender. Peduncle slender, terete, $\frac{1}{2}$ ft. long. Panicle deltoid, 6–9 in. long, formed of several very lax ascending racemes; pedicels $\frac{1}{6}$–$\frac{1}{4}$ in. long, articulated at the middle, the lower geminate; bracts minute, deltoid-cuspidate. Perianth $\frac{1}{4}$ in. long, circumscissile at the base; segments oblong, with a laxly-nerved brown keel. Stamens rather shorter; anthers oblong, as long as the glabrous filaments. Capsule turbinate, $\frac{1}{6}$ in. long, crowned by the twisted perianth.—Engl. Hochgebirgsfl. Trop. Afr. 160.

Lower Guinea. Angola: Huilla; in stony meadows between Mumpulla and Lopollo, 3800–5500 ft., *Welwitsch*, 3786 !

3. **A. inconspicuum,** *Baker in Journ. Bot.* 1871, 71. Root-fibres many, slender, not bearing tubercles; old leaves breaking up into fibres. Leaves 3–4, erect, thin, linear, glabrous, $\frac{1}{2}$ ft. long, not ciliated on the margin. Peduncle very slender, terete, 1–2 in. long. Raceme simple, very lax, 2–3 in. long; lower pedicels geminate, $\frac{1}{4}$ in. long, articulated at the middle. Perianth $\frac{1}{12}$ in. long; segments oblanceolate, white, with a 3-nerved green keel. Stamens rather shorter than the perianth; anthers minute, oblong; filaments glabrous.—Engl. Hochgebirgsfl. Trop. Afr. 160.

Nile Land. Somaliland: near Maid, *Hildebrandt*, 1469 !

4. **A. pumilum,** *Hua, Contr. Fl. Congo Franç. Lil.* 20. Crown of root not setose. Leaves 8–10, linear, 5–6 in. long, $\frac{1}{4}$ in. broad, moderately firm, glabrous, closely ribbed, pellucid on the margin. Peduncle terete, $1\frac{1}{2}$–2 in. long. Raceme simple, dense, not overtopping the leaves; bracts ovate, acute, the lower $\frac{1}{3}$ in. long; pedicels short, articulated at the apex, 3–4 in a cluster. Perianth-segments yellow, $\frac{1}{6}$ in. long, spreading, 3-nerved. Anthers oblong, finally twisted. Ovary subglobose; style filiform, incurved. Capsule oblong-trigonous, $\frac{1}{6}$ in. long. Seeds subglobose, 7–8 in a cell.

Lower Guinea. French Congo; mission station on the upper Kemo, a tributary of the Dua or Mobungi River, *Dybowski*, 761 !

No specimen at Kew.

5. **A. tenellum,** *Welw. ex Baker in Journ. Linn. Soc. ser.* 2, *Bot.* i. 256. Densely tufted. Root-fibres few, fleshy, cylindrical. Leaves densely tufted, narrowly linear, erect, glabrous, 1–3 in. long. Peduncle very slender, flexuose, glabrous, 4–5 in. long. Racemes 2–3, very lax, 2–3 in. long; rhachis flexuose; bracts minute, deltoid, membranous; pedicels short, articulated at the middle, lower 2–3-nate. Perianth $\frac{1}{4}$ in. long; segments linear, with a 3-nerved brown keel. Stamens rather shorter than the perianth; anthers oblong, minute; filaments glabrous. Capsule oblong, $\frac{1}{8}$ in. long.—Engl. Hochgebirgsfl. Trop. Afr. 160.

Lower Guinea. Angola: Huilla; Morro de Monino, in damp sandy pastures, 3800–5500 ft., *Welwitsch*, 3796 !

6. **A. dissitiflorum,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 257. Rootstock small, tuberous, with many wiry root-fibres not bearing tubers. Leaves linear, glabrous, moderately firm, 3–5 in. long, $\frac{1}{8}$ in. broad, scabrous on the margin. Peduncle acutely angled, about as long as the leaves. Raceme simple, lax, 1–1$\frac{1}{2}$ in. long, 3–6-flowered; pedicels solitary, $\frac{1}{8}$–$\frac{1}{4}$ in. long, articulated at the middle; bracts deltoid, cuspidate, $\frac{1}{8}$–$\frac{1}{4}$ in. long. Perianth $\frac{1}{4}$–$\frac{1}{3}$ in. long; segments oblong, with a pale brown 3-nerved keel. Stamens shorter than the perianth; anthers oblong, $\frac{1}{12}$ in. long, as long as the glabrous filaments.

Lower Guinea. Angola: Pungo Andongo; near Condo, in damp pastures, *Welwitsch,* 3781!

7. **A. subpetiolatum,** *Baker in Journ. Linn. Soc.* xv. 302. Root-fibres wiry, not bearing tubercles; old leaves splitting up into fibres. Leaves 4–6 to a stem, thin, linear, glabrous, subpetiolate, 1 ft. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad, not ciliated on the margin. Stem short, slender, pubescent upwards, not flattened. Raceme lax, simple, 2–4 in. long; pedicels short, ascending, articulated at the middle, the lower geminate. Perianth $\frac{1}{3}$ in. long; segments laxly 3-nerved in the keel. Anthers linear, $\frac{1}{12}$ in. long, shorter than the glabrous filaments. Capsule subglobose, $\frac{1}{6}$ in. diam.

Mozamb. Dist. Portuguese East Africa: Morambala Mountain, 1000 ft., *Kirk!* British Central Africa: Nyasaland; Mount Mlanje, *Scott-Elliot,* 8686! Shire Highlands, *Scott-Elliot,* 8619! and without precise locality, *Buchanan,* 697!

8. **A. pubirachis,** *Baker in Journ. Linn. Soc.* xv. 302. Rhizome horizontal; root-fibres wiry, sometimes bearing tubercles. Leaves 5–6, moderately firm, linear, glabrous, 6–9 in. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad, not ciliated at the margin. Peduncle 3–4 in. long, densely pubescent, acutely angled. Raceme simple, moderately dense, 1$\frac{1}{2}$–2 in. long; rhachis pubescent; pedicels ascending, articulated at the middle, all solitary, lower $\frac{1}{4}$ in. long; bracts linear, the lower $\frac{1}{2}$ in. long. Perianth $\frac{3}{8}$ in. long; segments oblong, with a red-brown 3-nerved keel. Anthers linear-oblong, $\frac{1}{8}$ in. long, as long as the glabrous filaments.

Upper Guinea. Niger Territory: Nupe, *Barter!*

9. **A. Nyasæ,** *Rendle in Trans. Linn. Soc. ser.* 2, *Bot.* iv. 52. Root-fibres wiry, not bearing tubercles. Leaves about 6, firm, glabrous, linear, 6–8 in. long, $\frac{1}{8}$–$\frac{1}{6}$ in. broad, scabrous on the margin. Peduncle as long as the leaves, flattened, not acutely angled. Racemes lax, simple or panicled, the end one 3–4 in. long; pedicels short, ascending, articulated at the middle, the lower 3–4-nate; bracts small, scariose, ovate or lanceolate. Perianth $\frac{1}{3}$ in. long; segments with a 3–5-nerved brown keel. Anthers linear-oblong, $\frac{1}{8}$ in. long, shorter than the glabrous filaments. Capsule turbinate, shorter than the perianth.

Mozamb. Dist. British Central Africa: Nyasaland; Mount Mlanje, *Whyte!*

10. **A. pterocaulon,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 258. Root-fibres long, slender; old leaves splitting into fibres. Leaves 3–4, linear, rigid, glabrous, 2 ft. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad, not ciliated

on the margin. Peduncle very long, stiffly erect, acutely angled. Raceme simple, moderately dense, 3–6 in. long; pedicels short, articulated at the middle, the lower 2–3-nate; bracts small, the lower lanceolate. Perianth $\frac{1}{3}$–$\frac{1}{2}$ in. long; segments with a 3–5-nerved brown keel. Stamens shorter than the perianth; anthers $\frac{1}{8}$ in. long, equalling the glabrous filaments.

Lower Guinea. Angola: Pungo Andongo; between Calundo and Pedras de Guinza, in thickets, *Welwitsch*, 3795 !

11. **A. anceps,** *Baker in Journ. Linn. Soc.* xv. 305. Root-fibres slender, wiry; neck crowned with bristles. Leaves about 4, erect, linear, firm, glabrous, strongly and closely ribbed, 1 ft. long, not ciliated on the margin. Peduncle shorter than the leaves, much compressed and acutely angled from base to apex. Raceme simple or forked at the base, moderately dense; pedicels very short, the lower 2–3-nate; bracts ovate, acuminate, the lower $\frac{1}{2}$ in. long. Perianth $\frac{3}{8}$ in. long; segments oblong, with a 5-nerved keel. Anthers linear-oblong, $\frac{1}{8}$ in. long, much longer than the glabrous filaments.—Fl. Cap. vi. 382.

Mozamb. Dist. British Central Africa: Rhodesia; Shesheke, on the Zambesi, *Holub !* Leshumo Valley, *Holub*, 405 ! 517 ! Matabeleland, *Elliott !*

Also in the Transvaal.

12. **A. andongense,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 257. Rootstock tuberous; root-fibres slender, bearing small tubers. Root-leaves 4–6, narrowly linear, firm, glabrous, $\frac{1}{2}$ ft. long, not ciliated on the margin. Peduncle 8–12 in. long, slender, naked, acutely angled from the apex to the base. Raceme lax, simple, 2 in. long; pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long, articulated below the middle, the lower 2–3 nate; bracts lanceolate, as long as the pedicels. Perianth $\frac{1}{3}$ in. long; segments linear-oblong, white, with a 3–4-nerved red-brown keel. Stamens distinctly shorter than the perianth; anthers linear-oblong, shorter than the glabrous filaments.

Lower Guinea. Angola: Pungo Andongo; in damp sandy woods, between Luxillo and Cazella, *Welwitsch*, 3797 ! 3798 !

13. **A. limosum,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 257. Rootstock thick, with many slender root-fibres; neck with a few bristles. Leaves 5–6, moderately firm, linear, 1 ft. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad, glabrous, not ciliated on the margin. Peduncle 3–6 in. long. Panicle 3–4 in. long, with several spreading branches; pedicels short, articulated at the middle, the lower fascicled; bracts minute, ovate. Perianth $\frac{1}{3}$ in. long; segments oblanceolate, with a 3–5-nerved red-brown keel. Anthers $\frac{1}{6}$ in. long; filaments glabrous. Style declinate, $\frac{1}{5}$ in. long.

Lower Guinea. Angola Barra do Bengo; in swampy ground, *Welwitsch*, 3803 ! 3804 !

14. **A. rubellum,** *Baker in Trans. Linn. Soc. ser.* 2, ii. 352. Root-fibres slender; neck crowned with a dense ring of bristles. Leaves 6–9 to a stem, linear, moderately firm, glabrous, $\frac{1}{2}$ ft. long, $\frac{1}{6}$–$\frac{1}{4}$ in.

leafless, flattened, as long as the leaves. Panicle of 3–5 racemes; bracts broad, not ciliated on the margin. Peduncle flattened, acutely angled, 1 ft. long. Racemes simple or forked at the base, moderately dense; pedicels short, articulated at the middle, the lower geminate; bracts minute, brown, ovate or lanceolate. Perianth $\frac{1}{3}$ in. long; segments linear-oblong, with a 5–7-nerved brown keel. Anthers linear, $\frac{1}{6}$ in. long, much longer than the glabrous filaments.

Mozamb. Dist. German East Africa: Kilimanjaro, 5000 ft., *Johnston!*

15. **A. campestre,** *Engl. Pfl. Ost-Afr. C.* 138. Rootstock thick, vertical. Leaves numerous, linear, firm, glabrous, 1 ft. or more long, $\frac{1}{6}$ in. broad at the middle, not ciliated on the margin. Peduncle angled, glabrous, rather shorter than the leaves. Raceme dense, simple, 3–4 in. long; rhachis sulcate, pubescent; pedicels very short, the lower 3-nate; bracts small, scariose, ovate or lanceolate. Perianth $\frac{1}{3}$ in. long; segments linear-oblong, with a 3-nerved brown keel. Anthers linear, $\frac{1}{6}$ in. long; filaments very short. Capsule shorter than the perianth.

Mozamb. Dist. German East Africa: Usambara; Tanga, *Holst*, 190! 2103!

16. **A. zanguebaricum,** *Baker in Journ. Linn. Soc.* xv. 302. Tufts cæspitose, springing from a dense mass of fibres; roots slender, wiry, not bearing tubercles. Leaves 6–7, firm, linear, glabrous, 8–12 in. long, not ciliated on the margin. Peduncle slender, acutely angled, leafless, 1 ft. long. Racemes lax, simple, 1–2 in. long; pedicels ascending, articulated at the middle, the lower geminate, $\frac{1}{4}$–$\frac{1}{3}$ in. long; bracts small, ovate, brown. Perianth $\frac{1}{3}$ in. long; segments oblong, with a 3-nerved red-brown keel. Anthers linear, $\frac{1}{6}$ in. long, longer than the glabrous filaments. Capsule subglobose, $\frac{1}{4}$ in. long.

Nile Land. British East Africa: Mombasa, *Hildebrandt*, 1949! *Kirk!* Nyika country, near Mombasa, *Wakefield!*

Mozamb. Dist. German East Africa: Usambara; Muoa, *Holst*, 3104!

17. **A. kemoense,** *Hua, Contr. Fl. Congo Franç. Lil.* 19. Rhizome robust, jointed; radical fibres many; neck slightly setose. Leaves many, distichous, linear, $1\frac{1}{2}$–2 ft. long, under $\frac{1}{2}$ in. broad, moderately firm, glabrous. Peduncle compressed, almost winged, about as long as the leaves. Raceme dense, formed of several many-flowered clusters, which are sometimes shortly racemose; bracts small, ovate, acute; pedicels $\frac{1}{4}$ in. long, articulated near the base. Perianth-segments oblong, 8–9-nerved, under $\frac{1}{2}$ in. long. Stamens shorter than the perianth; filaments white, flattened; anthers large, sagittate. Style long, filiform, curved. Ovules about 20 in a cell.

Lower Guinea. French Congo; mission station of the upper Kemo, a tributary of the Dua or Mobangi River, *Dybowski*, 707!

No specimen at Kew.

18. **A. nervosum,** *Hua, Contr. Fl. Congo Franç. Lil.* 18. Crown of the root slightly setose. Leaves linear, reaching a length of 16 in, $\frac{1}{2}$ in. broad, distinctly costate, closely ribbed, glabrous. Peduncle

small, deltoid, cuspidate; flowers many in a cluster; pedicels $\frac{1}{3}$ in. long, articulated above the middle. Perianth white; segments oblong, 3-nerved, $\frac{1}{4}$ in. long. Stamens rather shorter than the perianth; anthers linear. Style straight, not overtopping the anthers. Capsule globose-trigonous, $\frac{1}{4}$ in. long; faces transversely ribbed.

Lower Guinea. French Congo; mission station of the upper Kemo, *Dybowski*, 753!

No specimen at Kew.

19. **A. acuminatum,** *Rendle in Journ. Linn. Soc.* xxx. 411. Root-leaves few, linear, acuminate, glabrous, $\frac{1}{2}$–1 ft. long, $\frac{1}{6}$–$\frac{1}{4}$ in. broad. Peduncle naked, subterete, nearly 1 ft. long. Raceme simple, moderately dense, $2\frac{1}{2}$–4 in. long; pedicels short, solitary, articulated below the middle; lower bracts 1 in. long, subulate from a broad base. Perianth nearly $\frac{1}{2}$ in. long; segments lanceolate, 3-nerved in the green keel. Anthers linear, above $\frac{1}{4}$ in. long, longer than the glabrous filaments.

Nile Land. British East Africa: Taita Mountains, *Gregory!*

Mozamb. Dist. German East Africa: between Uyui and the coast, *Taylor!*

20. **A. nubicum,** *Baker in Journ. Linn. Soc.* xv. 301. Rootstock tuberous, crowned with copious bristles. Leaves linear, membranous, $\frac{1}{2}$ ft. long, $\frac{1}{2}$ in. broad low down, tapering to the point. Peduncle 6–8 in. long, slender, fragile, terete, bearing 2–3 reduced leaves. Racemes very lax, simple or forked, $\frac{1}{2}$ ft. long; pedicels short, articulated at the middle, the lower 2–3-nate. Perianth $\frac{1}{2}$ in. long; segments oblanceolate, white, with a 3-nerved brown keel. Stamens half as long as the perianth; anthers linear, convolute spirally as they fade, as long as the filiform glabrous filaments.

Nile Land. British East Africa: Moru; Neangara, *Petherick!*

21. **A. Bragæ,** *Engl. Pfl. Ost-Afr. C.* 138. Rhizome thick. Leaves linear, glabrous, 1 ft. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad. Peduncle as long as the leaves, slightly compressed, at first pubescent upwards; bracts lanceolate, acuminate, scariose, the lower longer than the buds; pedicels short, the lower 2–3-nate. Perianth above $\frac{1}{2}$ in. long; segments with a purple 3-nerved keel. Filaments as long as the anthers.

Mozamb. Dist. Portuguese East Africa: Beira, *Braga!*

No specimen at Kew.

22. **A. matabelense,** *Baker.* Root not seen. Leaves linear, rigid, glabrous, 1 ft. long, not ciliated on the margin. Peduncle long, slender, terete in the lower half, acutely angled upwards. Panicle composed of several very lax few-flowered racemes, 2–3 in. long; pedicels $\frac{1}{4}$ in. long, articulated below the middle, geminate; bracts minute, ovate. Perianth $\frac{5}{8}$ in. long; segments oblanceolate, with a laxly 5-nerved red-brown keel. Anthers linear, $\frac{1}{6}$ in. long, as long as the glabrous filaments.

Mozamb. Dist. British Central Africa: Matabeleland, banks of the Matengwe River, *Holub!*

23. **A. purpuratum,** *Rendle in Journ. Linn. Soc.* xxx. 413. Leaves linear, subrigid, glabrous, 1 ft. long, $\frac{1}{4}$ in. broad. Peduncle naked, flattened, about as long as the leaves. Raceme simple, $\frac{1}{2}$ ft. long; pedicels short, articulated at the middle, lower geminate; bracts small, purple, ovate, acuminate. Perianth $\frac{1}{2}$ in. long; segments linear-lanceolate, purple at the base and on the keel. Stamens nearly as long as the perianth; anthers linear, $\frac{1}{4}$ in. long; filaments flattened, spotted with crimson.

Nile Land. British East Africa: Taita Mountains, *Gregory!*

No specimen at Kew.

24. **A. uyuiense,** *Rendle in Journ. Linn. Soc.* xxx. 415. Root-fibres slender; neck crowned with short bristles. Leaves 5 to a stem, linear, glabrous, the longest 20–22 in. long, $2\frac{1}{2}$–4 lin. broad. Peduncle naked, shorter than the leaves, flattened upwards, not winged. Raceme simple, 4 in. long; rhachis not flexuose; pedicels short, ascending, articulated below the middle, lower geminate; bracts small, ovate-acuminate. Perianth $\frac{1}{2}$–$\frac{5}{8}$ in. long; segments linear-oblong, 5-nerved in the purple keel. Stamens as long as the perianth; anthers linear, above $\frac{1}{4}$ in. long; filaments flattened, glabrous.

Mozamb. Dist. German East Africa: between Uyui and the coast, *Taylor!*

No specimen at Kew.

25. **A. monophyllum,** *Baker in Journ. Bot.* 1878, 324. Rootstock a globose tuber crowned with many fine bristles; root-fibres slender. Stem slender, angled, pubescent, $\frac{1}{2}$ in. long, with a sheath at the base and a single lanceolate glabrous coriaceous leaf 6–9 in. long, with a clasping base from the middle. Raceme simple, moderately dense, 1–3 in. long; rhachis pubescent; pedicels ascending, articulated at the middle, $\frac{1}{8}$–$\frac{1}{4}$ in. long, all solitary; bracts lanceolate or linear from a broad base, the lower $\frac{1}{2}$ in. long. Perianth $\frac{1}{3}$–$\frac{1}{2}$ in. long; segments linear-oblong, with a 3-nerved brown keel. Anthers linear, $\frac{1}{8}$ in. long, as long as the glabrous filament.

Nile Land. British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 1793!

26. **A. caulescens,** *Baker in Journ. Linn. Soc.* xv. 303. Root-fibres fleshy, cylindrical. Root-leaves about 3, lanceolate, membranous, glabrous, not ciliated on the margin, the longest 1 ft. long, $\frac{3}{4}$–1 in. broad. Stem long, slender, bearing 3–4 large leaves of similar texture. Racemes very lax, the lower $\frac{1}{2}$ ft. long, forming a panicle 1 ft. long; pedicels ascending, $\frac{1}{2}$–$\frac{3}{4}$ in. long, articulated at the middle, the lower 3–4-nate; bracts minute, ovate, cuspidate. Perianth $\frac{1}{3}$ in. long; segments linear, with a 3-nerved green keel. Stamens distinctly shorter than the perianth; anthers minute, oblong, much shorter than the glabrous filaments. Capsule globose, $\frac{1}{6}$ in. long.

Upper Guinea. Niger Territory: Nupe, *Barter*, 1515!

27. **A. triphyllum,** *Baker.* Rootstock tuberous, fibres slender, wiry. Produced leaves about 3, with a long sheathing base and a sub-coriaceous glabrous lanceolate blade 4–6 in. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad at the

middle, with raised veins and thickened stramineous edges. Peduncle slender, pubescent, deeply grooved, 6–8 in. long. Raceme simple, moderately dense, 3–4 in. long; pedicels very short, articulated, lower geminate; bracts lanceolate, acuminate, lower $\frac{1}{2}$–$\frac{3}{4}$ in. long. Perianth $\frac{1}{4}$ in. long; segments lanceolate, with 3 brown ribs in the keel. Anthers linear, $\frac{1}{6}$ in. long, much exceeding the glabrous filaments.

Nile Land. British East Africa: Jur; at the River Jur, *Schweinfurth*, 1581! 1739!

28. **A. speciosum,** *Rendle in Journ. Linn. Soc.* xxx. 413, *t.* 33. Root-fibres many, slender; root-neck crowned with bristles. Leaves 8, distichous, glabrous, the largest sheathing the stem for 1 ft. and with a free blade about as long and above 1 in. broad. Peduncle $1\frac{1}{2}$ ft. long, flattened and acutely angled; edges minutely ciliated. Raceme simple, moderately dense, 4–5 in. long; pedicels short, erecto-patent, solitary or geminate; upper bracts small, ovate; lower lanceolate, as long as the pedicels. Perianth $\frac{1}{2}$ in. long; segments 5–7-nerved in the dark red keel. Anthers linear, above $\frac{1}{4}$ in. long, longer than the glabrous filaments.

Mozamb. Dist. German East Africa: Unyamwezi; Uyui, *Taylor!*
No specimen at Kew.

29. **A. usseramense,** *Baker.* Root not seen. Leaves several to a stem, erect, ensiform, $1\frac{1}{2}$ ft. long, $\frac{3}{4}$–1 in. broad low down, tapering gradually to the point, moderately firm, glabrous, distinctly costate, closely distinctly veined. Peduncle long, flattened. Racemes moderately dense, panicled; bracts small, ovate-lanceolate; pedicels short, ascending, articulated at the middle, the lower geminate. Perianth greenish-white, $\frac{1}{4}$ in. long; segments oblong. Anthers linear-oblong, $\frac{1}{6}$ in. long; filaments short. Capsule ovoid-trigonous, $\frac{1}{4}$ in. long.

Nile Land. German East Africa: Usseramo; at Bunha, *Stuhlmann*, 7014!
No specimen at Kew.

30. **A. Buchanani,** *Baker.*—Root-fibres wiry, not bearing tubercles; old leaves splitting into fibres. Leaves 5–6 in a tuft, oblanceolate, 2 ft. long, $1\frac{1}{2}$ in. broad above, thin, glabrous, narrowed gradually to the channelled base, not ciliated on the margin. Peduncle stout, stiffly erect, shorter than the leaves. Raceme simple or panicled, 3–6 in. long; pedicels short, ascending, articulated at the middle, the lower 2–3-nate; bracts lanceolate, the lower $\frac{1}{2}$ in. long. Perianth $\frac{1}{2}$ in. long; segments laxly 3–5-nerved in the red-brown keel. Anthers linear, $\frac{1}{6}$ in. long, longer than the glabrous filaments. Capsule subglobose, $\frac{1}{4}$ in. long.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 201!

31. **A. milanjianum,** *Rendle in Trans. Linn. Soc. ser.* 2, *Bot.* iv. 51. Leaves linear, subrigid, glabrous, sheathing the base of the stem, the longest $1\frac{1}{2}$ ft. long, $\frac{3}{4}$–1 in. broad. Peduncle compressed, about 1 ft.

long, with one empty bract half-way up. Panicle 3–4 in. long, formed of a few short few-flowered ascending branches; pedicels short, articulated at the middle. Perianth $\frac{1}{3}$ in. long; segments with a 7-nerved green keel. Anthers $\frac{1}{5}$ in. long; filaments filiform, glabrous. Capsule $\frac{1}{4}$ in. long.

Mozamb. Dist. British Central Africa: Nyasaland; Mount Mlanje, *Whyte*, 123!

No specimen at Kew.

32. **A. Giryamæ,** *Rendle in Journ. Linn. Soc.* xxx. 412. Rhizome stout; root-fibres many, cylindrical. Leaves 3 to a stem, lanceolate, plicate, rigid, glabrous, with a thickened margin, 1–1½ ft. long, 1 in. broad. Peduncle 3 ft. long, much compressed, acutely angled. Panicles in the axils of distant bracts; flower bracts minute, ovate, reddish. Perianth nearly $\frac{1}{2}$ in. long; segments oblong-lanceolate, tinged with red, 5–7-nerved in the keel. Anthers linear, $\frac{1}{4}$ in. long, twice as long as the flattened glabrous filaments.

Nile Land. British East Africa: Giryama and Shimba Hills, near Mombasa, *Taylor!*

No specimen at Kew.

33. **A. orchideum,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 258. Rootstock tuberous, oblique, sending out long slender root-fibres; neck crowned with copious fibres. Leaves laxly disposed over the lower part of the stem, oblong, acute, 4–9 in. long, 1¼–1½ in. broad, subcoriaceous, glabrous, not ciliated on the margin. Peduncle 3–8 in. long, subterete, not angled upwards. Raceme dense, usually simple, 3–4 in. long; pedicels ascending, articulated at the middle, $\frac{1}{4}$–$\frac{1}{2}$ in. long; bracts large, lanceolate, longer than the buds. Perianth $\frac{1}{3}$ in. long; segments linear-oblong, white, with a laxly-nerved red-brown keel. Stamens much shorter than the perianth; anthers as long as the glabrous filaments. Capsule globose, $\frac{1}{4}$ in. diam.; valves horizontally plicate.—Engl. Hochgebirgsfl. Trop. Afr. 160.

Lower Guinea. Angola: Huilla; at the foot of the Serra de Monino, in damp grassy places, 3800–5500 ft., *Welwitsch*, 3806!

34. **A. superpositum,** *Baker in Journ. Bot.* 1878, 324. Rootstock and root-leaves not seen. Peduncle 2–2½ ft. long, stiffly erect, bearing 3–4 sessile oblong acute subcoriaceous glabrous leaves, 3–6 in. long, 12–21 lin. broad at the middle, with thickened stramineous margins. Racemes 1–3, lax, 2–3 in. long; pedicels short, ascending, articulated at the middle, the lower 3–4-nate; lower bracts lanceolate, as long as the pedicels. Perianth $\frac{1}{6}$ in. long; segments linear, with a green keel. Stamens nearly as long as the perianth; anthers small. Capsule subglobose, $\frac{1}{6}$ in. diam.

Nile Land. British East Africa: Niamniam; by the River Ibba, *Schweinfurth*, ser. iii. 174!

35. **A. benguellense,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 257. Cæspitose, with slender root-fibres, not bearing tubers; root-neck crowned

with bristles. Leaves moderately firm, linear, 3–6 in. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad, glabrous on the surfaces, distinctly ciliated on the margin. Peduncle 3–9 in. long, strongly angled upwards. Racemes short, lax, simple or branched; pedicels short, articulated at the middle, lower 2–3-nate; lower bracts lanceolate, longer than the pedicels. Perianth $\frac{1}{3}$ in. long; segments oblanceolate, with a red-brown 3–5-nerved keel. Stamens shorter than the perianth; anthers oblong, shorter than the glabrous filaments.—Engl. Hochgebirgsfl. Trop. Afr. 160.

Lower Guinea. Angola: Huilla; pastures around Lopollo and Humpata, 3800–5500 ft., *Welwitsch*, 3794!

36. **A. Stuhlmanni,** *Engl. Pfl. Ost-Afr. C.* 138. Rhizome oblique, rather thick. Leaves many, linear-lanceolate, longer than the scape, minutely ciliated on the margin. Peduncle pubescent, slightly compressed. Lower flowers 2–3-nate; bracts lanceolate; pedicels short. Perianth above $\frac{1}{2}$ in. long; segments linear-lanceolate, with a 3-nerved purple keel. Filaments as long as the anthers.

Nile Land. British East Africa: Mpororo; Kirere, 4500 ft., *Stuhlmann!*

No specimen at Kew.

37. **A. venulosum,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* ii. 352. Root-fibres slender, wiry; neck with a few bristles. Leaves many, radical, lanceolate, very rigid, crisped, strongly veined, glabrous on the surface, distinctly ciliated on the margin, $\frac{1}{2}$–1 ft. long, $\frac{1}{2}$ in. broad. Peduncle 6–9 in. long, glabrous, acutely angled upwards. Racemes simple, lax, 4–6 in. long; pedicels short, articulated at the middle, 1–2-nate; bracts minute, ovate. Perianth $\frac{1}{3}$–$\frac{1}{2}$ in. long; segments with a 3–5-nerved red-brown keel. Anthers linear, $\frac{1}{6}$ in. long, longer than the glabrous filaments. Capsule small, globose.

Nile Land. British East Africa: Taveta, 2000–3000 ft., *Johnston!*

38. **A. Grantii,** *Baker in Trans. Linn. Soc.* xxix. 160, *t.* 103, *B.* Rootstock tuberous; root-fibres very numerous, slender, not bearing tubercles; root-neck with copious bristles. Leaves linear, moderately firm, densely pubescent on both surfaces, the largest 6–8 in. long, $\frac{1}{2}$ in. broad at the middle, narrowed to the sheathing base. Stem slender, pubescent, acutely angled, 1 ft. long. Raceme lax, simple, 3 in. long; axis pubescent, flexuose; pedicels very short, articulated at the middle, geminate. Perianth $\frac{1}{2}$ in. long; segments oblong-lanceolate, with a 3–5-nerved brown keel. Anthers linear, $\frac{1}{6}$ in. long, equalling the glabrous filaments.—Baker in Journ. Linn. Soc. xv. 303.

Mozamb. Dist. German East Africa: Uyanzi; at the "Boss Rock" in the Mgunda Mkali, common in every marsh, 4000 ft., *Speke & Grant!*

39. **A. arenarium,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 259. Root-fibres very long, densely tufted, bearing tubercles; neck densely setose. Leaves 3–4, lanceolate, moderately firm, densely pubescent on both surfaces, $\frac{1}{2}$ ft. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad at the middle, narrowed gradually to the base. Peduncle 1 ft. long, pubescent and acutely angled upwards.

Raceme dense, simple, 1–2 in. long; pedicels short, articulated at the middle, the lower 2–3-nate; bracts lanceolate, pilose, $\frac{1}{2}$–$\frac{3}{4}$ in. long. Perianth $\frac{1}{3}$ in. long; segments with a 5-nerved brown keel. Anthers linear, $\frac{1}{8}$ in. long, equalling the glabrous filaments.

Lower Guinea. Angola: Pungo Andongo; in thickets in sandy ground between Candumbe and Lombe, *Welwitsch*, 3802!

40. **A. sphacelatum,** *Baker in Journ. Linn. Soc.* xv. 303. Root-stock and roots not seen. Leaves lanceolate, 1 ft. long, $\frac{3}{4}$–1 in. broad at the middle, moderately firm, densely pubescent on both surfaces, narrowed to the clasping base. Peduncle 1–1$\frac{1}{2}$ ft. long, stiffly erect, pubescent, acutely angled. Racemes simple or forked at the base, moderately dense, 2–4 in. long; rhachis pubescent; pedicels short, ascending, articulated near the base, the lower 2–3-nate; lower bracts lanceolate, pubescent, $\frac{1}{2}$ in. long. Perianth $\frac{1}{2}$ in. long; segments lanceolate, white tipped with purple, 5-nerved on the keel. Anthers linear, $\frac{1}{6}$ in. long, as long as the glabrous filaments.

Lower Guinea. Angola: seventy miles from Ambriz, *Monteiro!*

South Central. Congo Free State: at Bolobo, on the River Congo, *Johnston!*

41. **A. angustifolium,** *Hochst. in Schimp. Pl. Abyss. No.* 1623. Root-fibres few, cylindrical; root-neck crowned with a few broad membranous scales. Leaves 4–5, narrowly linear, acute, glabrous, 2–3 in. long. Flowers 2–3 in a sessile corymb; pedicels ascending, 1–1$\frac{1}{2}$ in. long, not articulated. Perianth white, $\frac{1}{3}$ in. long; segments linear-oblong, laxly 3-nerved, not keeled with brown. Stamens rather shorter than the perianth; filaments smooth, slightly flattened; anthers yellow, $\frac{1}{12}$ in. long. Style $\frac{1}{6}$–$\frac{1}{5}$ in. long.—A. Rich. Tent. Fl. Abyss. ii. 331; Baker in Journ. Linn. Soc. xv. 300.

Nile Land. Abyssinia: Tigre; on a plateau near Jelajeranne, *Schimper*, 1623! Wadjerat Province, *Quartin-Dillon & Petit*, 187!

42. **A. humile,** *Hochst. in Schimp. Pl. Abyss. No.* 1369. Root-fibres few, cylindrical; root-neck crowned with large white membranous scales. Leaves 6–8, linear, glabrous, thin, arcuate, 3–6 in. long, minutely ciliated on the margin. Flowers 6–8 in a sessile corymb; pedicels ascending, 1–1$\frac{1}{2}$ in. long, not articulated. Perianth white, $\frac{1}{2}$ in. long; segments linear-oblong, laxly 3-nerved on the back, not keeled with brown. Stamens rather shorter than the perianth; filaments smooth; anthers yellow, 1 lin. long. Style $\frac{1}{6}$–$\frac{1}{4}$ in. long.—A. Rich. Tent. Fl. Abyss. ii. 331; Baker in Journ. Linn. Soc. xv. 300. *Phalangium humile*, Schweinf. Beitr. Fl. Æthiop. 294.

Nile Land. Abyssinia: Samen; meadows near Enjedcap, *Schimper*, 1369! and without precise locality, *Schimper*, 320!

43. **A. corymbosum,** *Baker in Journ. Bot.* 1877, 71. Root-fibres many, short, cylindrical, fleshy; root-neck crowned with copious fibres and large membranous scales. Leaves 5–6, narrowly linear, 2–3 in. long, glabrous on the surface, distinctly ciliated on the margin.

Peduncle very slender, 1½ in. long. Flowers 3–4, corymbose; pedicels ascending, ½–¾ in. long, not articulated; bracts linear, as long as the pedicels. Perianth ⅓ in. long; segments oblanceolate, white, with a 3–5-nerved green keel. Stamens nearly as long as the perianth; anthers linear, ⅛ in. long, shorter than the glabrous filaments. Style ⅕ in. long. —Engl. Hochgebirgsfl. Trop. Afr. 160.

Nile Land. Somaliland: near Maid, 5000–6000 ft., *Hildebrandt*, 1471!

44. **A. Jamesii,** *Baker*. Root not seen. Leaves 4, erect, thin, linear, with a few long hairs on the surface, ½ ft. long, ¼–½ in. broad above the clasping base. Peduncle slender, very short. Racemes lax, 2–4 in. long, simple or forked at the base; pedicels ascending, solitary, not articulated, the lower ½–¾ in. long; bracts very minute. Perianth ⅓ in. long; segments lanceolate, with 3 lax green ribs in the keel. Stamens rather shorter than the perianth; anthers linear, ⅛ in. long, curling up spirally as they fade; filaments glabrous, as long as the anthers.

Nile Land. Somaliland: Hahi and Harradigit, *James & Thrupp!*

45. **A. gregorianum,** *Rendle in Journ. Linn. Soc.* xxx. 416. Root-fibres short, stout; root-neck crowned with membranous scales, surrounded by bristles. Leaves 4–5, linear, thin, erect, glabrous, 5–7 in. long, ⅛ in. broad. Peduncle 5–6 in. long. Raceme corymbose, 5–6-flowered; lower bracts lanceolate, acuminate, ⅓ in. long, half as long as the ascending pedicels. Perianth 4–5 lin. long; segments lanceolate, white, with green ribs. Stamens rather shorter than the perianth; filaments filiform, rather shorter than the anthers. Style short.

Nile Land. British East Africa: Kapte plains, on the banks of the River Athi, *Gregory!*

No specimen at Kew.

46. **A. arvense,** *Schinz in Verhand. Bot. Ver. Brandenb.* xxxi. 216. Root-fibres many, slender; neck crowned with large white membranous scales. Leaves narrowly linear or subterete, glabrous, 6–8 in. long. Peduncle short, stout, slightly angled. Racemes very numerous, long, lax, forming a panicle 1–1½ ft. long; rhachis slender, glabrous; pedicels ascending or spreading, the lower ¾–1 in. long; bracts minute, ovate or lanceolate. Perianth ¼ in. long; segments oblanceolate, obtuse, white with a distinct brown keel. Filaments scabrous, ⅛ in. long; anthers oblong, minute. Capsule subglobose, ⅙ in. diam.

Lower Guinea. German South-West Africa: Amboland; Olukonda, *Schinz* 22! 19!

An imperfect specimen collected by Dr. Holub in Rhodesia, at Shesheke, on the Zambesi, probably belongs here.

47. **A. flavoviride,** *Baker*. Root-fibres cylindrical; neck crowned with large ovate membranous scales. Leaves many, erect, thick, glabrous, narrowly linear, 1 ft. long, $\frac{1}{12}$ in. broad. Peduncle short.

Panicle above 1 ft. diam.; branches slender, glabrous, lower compound; racemes lax, reaching 5–6 in. long; pedicels erecto-patent, solitary, articulated at the apex; bracts minute, ovate. Perianth bright yellow, oblong, $\frac{1}{3}$ in. long; segments linear, reflexing, with a green keel. Stamens shorter than the perianth; filaments very scabrous; anthers minute, oblong. Style overtopping the anthers. Capsule globose, the size of a pea.

Mozamb. Dist. British Central Africa: Ngamiland; Botletle Valley, *Lugard*, 194!

48. **A. pyrenicarpum,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 259. Root-fibres slender; root-neck crowned with small membranous scales. Leaves 6–8, narrowly linear, channelled down the face, 6–8 in. long, slightly pilose. Peduncles 2–4 in a cluster, 2–3 in. long, finely pilose. Raceme lax, simple, 2–3 in. long; pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long, the lower cernuous; bracts linear-subulate, as long as the pedicels. Perianth white, $\frac{1}{3}$ in. long; segments oblanceolate. Stamens $\frac{1}{3}$ shorter than the perianth-segments; anthers minute. Capsule turbinate, $\frac{1}{4}$ in. long. Seeds solitary.—Engl. Hochgebirgsfl. Trop. Afr. 160.

Lower Guinea. Angola: Huilla; in damp pastures, between Humpata and Gambas, 3800–5500 ft., *Welwitsch!*

49. **A. elongatum,** *Willd. Sp. Plant.* ii. 136. Root-fibres cylindrical, not bearing tubers; neck crowned with large white membranous scales. Radical leaves 6–12, subterete or narrowly linear, 6–15 in. long, clothed with fine spreading hairs. Peduncle 3–6 in. long. Racemes lax, 2–4 in. long, simple or compound; rhachis slender, pubescent; pedicels ascending, the lower $\frac{1}{4}$–$\frac{1}{2}$ in. long; bracts minute, ovate or lanceolate. Perianth $\frac{1}{4}$ in. long; segments oblong, white, with a distinct brown keel. Anthers oblong, minute; filaments scabrous, $\frac{1}{8}$–$\frac{1}{6}$ in. long. Capsule turbinate, $\frac{1}{6}$ in. long.—Fl. Cap. vi. 389. *A. jacquinianum*, Roem. et Schultes, Syst. Veg. vii. 462; Baker in Journ. Bot. 1872, 138; Journ. Linn. Soc. xv. 308. *A. flexifolium*, Jacq. Collect. Suppl. 93; Ic. t. 412, non Linn. *Trachyandra Jacquinii*, Kunth, Enum. iv. 578.

Lower Guinea. Angola: Pungo Andongo and Huilla; in damp sandy soil, *Welwitsch*, 3788! 3789! 3790! 3791! 3799! *Newton!*

Mozamb. Dist. Portuguese East Africa: Beira, *Braga!* British Central Africa: Urungu; Fwambo, 5000–6000 ft., *Carson*, 47! 53!

Also in South Africa.

50. **A. Oatesii,** *Baker in Journ. Bot.* 1878, 324. Neck of the root crowned with large membranous scales. Leaves 5–6, erect, subterete, channelled down the face, 5–6 in. long, clothed with fine white spreading or deflexed hairs. Peduncle slender, glabrous, as long as the leaves. Raceme simple, lax, 4–6 in. long; pedicels erecto-patent, the lower 6–9 lin. long; bracts minute, lanceolate. Perianth $\frac{1}{4}$–$\frac{1}{3}$ in. long; segments linear-oblong, with a distinct brown keel. Stamens nearly as

long as the perianth; filaments scabrous, much longer than the minute oblong anthers.—Rolfe in Oates, Mateb. edit. 2, 411, t. 13.

Mozamb. Dist. British Central Africa: Matebeleland, *Oates! Elliott!*

51. **A. Saltii,** *Baker in Journ. Linn. Soc.* xv. 309. Leaves 6–8, thin, linear, 1 ft. long, $\frac{1}{12}$ in. broad, clothed all over with spreading or deflexed soft hairs. Peduncle pubescent, $\frac{1}{2}$ ft. long. Raceme simple, 3 in. long, lax in the lower half; rhachis pilose; bracts lanceolate-cuspidate, $\frac{1}{6}$–$\frac{1}{4}$ in. long; pedicels solitary, articulated at the apex, the lower $\frac{1}{4}$–$\frac{1}{3}$ in. long. Perianth white, $\frac{1}{4}$ in. long; segments with a distinct brown keel. Stamens scarcely shorter than the perianth; filaments densely muricated.

Nile Land. Abyssinia, *Salt!* in the British Museum.

52. **A. malosanum,** *Baker.* Bases of old leaves not breaking up into fibres. Basal leaves many to a stem, moderately firm, narrowly linear, 6–9 in. long, clothed with fine spreading hairs. Peduncles densely pubescent, simple or forked, about as long as the leaves. Racemes very lax, $\frac{1}{2}$–1 ft. long; bracts small, ovate, white with a distinct green keel; pedicels solitary, $\frac{1}{4}$ in. long, deflexed in the fruiting stage, articulated at the apex. Perianth $\frac{1}{4}$ in. long; segments oblong, white tinged with orange, with a very distinct 1-nerved green keel. Stamens nearly as long as the perianth; anthers oblong, rather shorter than the filaments. Capsule globose, muricated, the size of a small pea.

Mozamb. Dist. British Central Africa: Nyasaland; Mount Malosa, 4000–6000 ft., *Whyte!*

53. **A. taylorianum,** *Rendle in. Journ. Linn. Soc.* xxx. 415. Tufted, from a much-branched woody knotted rhizome, with wiry root-fibres. Leaves linear, thin, glabrous, the largest above 1 ft. long, 6–8 lin. broad, ciliate on the midrib and crisped margins. Peduncle flattened downwards, 6 in. long, covered with farinaceous pubescence. Raceme simple, 5–6 in. long; bracts deltoid-subulate, the lower above $\frac{1}{2}$ in. long; pedicels articulated at the middle, solitary, the lowest $\frac{1}{4}$–$\frac{1}{3}$ in. long. Perianth $\frac{1}{3}$ in. long; segments lanceolate, 3–5-nerved, keeled with brown. Filaments subulate, scabrous; anthers linear. Capsule subglobose-trigonous, $\frac{1}{4}$ in. long.

Mozamb. Dist. German East Africa: Unyamwezi; Uyui, *Taylor!*

No specimen at Kew.

54. **A. nidulans,** *Baker in Journ. Linn. Soc.* xv. 314. Rootstock thick, creeping; tufts of leaves surrounded by copious short bristles. Leaves narrowly linear, firm, glabrous, 9–15 in. long. Peduncle slender, terete, glabrous, 3–12 in. long. Racemes moderately dense, 1–3 in. long, simple or sparsely panicled; rhachis angled, glabrous; pedicels very short, articulated at the middle, the lower 3–4-nate; bracts small, ovate, white, scariose, several to a node. Perianth seen only in an early stage; segments oblong, distinctly keeled with green. Filaments long; anthers linear.

Mozamb. Dist. British Central Africa: Nyasaland; summit of Mount Chiradzulu, *Meller!*

55. **A. triflorum,** *Ait. Hort. Kew* i. 448. Root-fibres many, slender, not bearing tubers; neck crowned by a dense ring of bristles. Leaves firm, linear, glabrous, 1 ft. or more long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad. Peduncle 1–1$\frac{1}{2}$ ft. long, strongly angled upwards. Raceme dense, simple, 3–6 in. long; rhachis flexuose, glabrous; pedicels short, ascending, single or 2-nate, articulated at the middle; bracts small, ovate, scariose. Perianth $\frac{1}{2}$–$\frac{5}{8}$ in. long; segments lanceolate, with a laxly 5–7-nerved red-brown keel. Anthers linear, $\frac{1}{4}$ in. long; filaments as long. Capsule oblong-trigonous.—Baker in Journ. Linn. Soc. xv. 315; Fl. Cap. vi. 383. *A. Cameroni,* Baker in Journ. Linn. Soc. xv. 314.

Nile Land. Kordofan, *Pfund,* 467! 856! **British East Africa:** Jur; Jur Ghattas, *Schweinfurth,* 1977! Bongo; at the Lesi River, *Schweinfurth,* 3977! Uganda, *Lugard!*

Mozamb. Dist. German East Africa: Karagwe, 4000–5000 ft., *Scott-Elliot,* 8122! Lake Tanganyika, *Cameron!* British Central Africa: Urungu; Fwambo, 5000–6000 ft., *Carson,* 51! Nyasaland; Tanganyika Plateau, at Fort Hill, 3500–4000 ft. *Whyte!* Songui and Karonga, 1700–2000 ft., *Whyte!* Mount Malosa, 4000–6000 ft., *Whyte!*

Also in South Africa.

56. **A. molle,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 259. Root-fibres many, long, slender, bearing small tubers near the end; tufts of leaves surrounded by a few fibres. Leaves lanceolate, 2–3 in. long, densely clothed with fine spreading white hairs, narrowed gradually into a slender petiole as long as the blade. Peduncle slender, hairy, shorter than the leaves. Racemes 1–1$\frac{1}{2}$ in. long, simple or forked; pedicels ascending, lower 2–3-nate, $\frac{1}{6}$–$\frac{1}{4}$ in. long, articulated at the middle; bracts small, ovate, cuspidate, green, densely hairy. Perianth $\frac{1}{4}$ in. long; segments white, with a 5-nerved brown keel. Anthers $\frac{1}{8}$ in. long, longer than the scabrous filaments. Capsule globose, $\frac{1}{6}$ in. long.

Lower Guinea. Angola: Pungo Andongo; near the Fort, frequent in dry stony soil, *Welwitsch,* 3780!

57. **A. Whytei,** *Baker.* Rootstock not seen. Leaves linear, moderately firm, above 1 ft. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad at the middle, narrowed gradually to a very narrow base, with a very distinct midrib and close fine veins densely clothed with short soft hairs. Peduncle flattened, narrowly winged, simple, 1 ft. long. Raceme simple, 2–3 in. long, dense upwards; bracts small, ovate, scariose, many in a cluster, white tipped with dark brown; pedicels short, articulated at the middle, the lower 2–3-nate. Perianth-segments oblong, $\frac{1}{4}$ in. long, white with a many-nerved pale brown keel. Stamens nearly as long as the perianth; anthers large, white, linear, much longer than the filaments.

Mozamb. Dist. British Central Africa: Nyasaland; Mount Zomba and vicinity, 2500–3500 ft., *Whyte!*

14. CHLOROPHYTUM, Ker; Benth. et Hook. f. Gen. Plant. iii. 788.

Perianth polyphyllous, not twisting; segments subequal, oblong or linear-oblong, 3–5-nerved in the keel. Stamens 6, shorter than the

perianth, hypogynous or attached to the base of the segments; filaments filiform or slightly flattened; anthers linear, erect, dehiscing down the face. Ovary sessile or subsessile, globose, 3-celled; ovules few or many in a cell; style filiform; stigma minute, capitate. Capsule deeply lobed, acutely angled, loculicidally 3-valved. Seeds compressed; testa black; albumen firm; embryo nearly as long as the albumen.—Root-stock not bulbous; root-fibres many, usually fleshy or bearing small tubers. Leaves linear, lanceolate or oblong, often thin and petiolate. Peduncle naked or bearing a few reduced leaves. Racemes simple or panicled: pedicels articulated, the lower usually 2–4-nate. Flowers small, white or greenish-white.

Species 70–80, concentrated in the Tropical regions of the Old World.

*Leaves thin, distinctly petiolate, laxly veined.
- Leaves linear.
  - Peduncle short . . . . . 1. *C. fusiforme.*
  - Peduncle long . . . . . 2. *C. ramiferum.*
- Leaves lanceolate.
  - Leaf-blade 4–6 in. long.
    - Raceme dense . . . . . 3. *C. Afzelii.*
    - Raceme dense upwards, lax downwards . . 4. *C. miserum.*
    - Raceme lax.
      - Leaves glabrous.
        - Blade broadest near the base . . . 5. *C. alismæfolium.*
        - Blade broadest at the middle.
          - Blade $\frac{1}{2}$–$\frac{5}{8}$ in. broad . . . . 6. *C. Holstii.*
          - Blade 1 in. broad . . . . . 7. *C. brevipes.*
      - Leaves villous beneath . . . . . 8. *C. bracteatum.*
  - Leaf-blade 6–9 in. long.
    - Raceme dense . . . . . 9. *C. scabrum.*
    - Raceme very lax . . . . . 10. *C. sparsiflorum.*
  - Leaf-blade very long . . . . . 11. *C. macrophyllum.*
- Leaves ovate-lanceolate or oblong-lanceolate.
  - Flowers very small.
    - Blade $\frac{3}{4}$ in. broad . . . . . 12. *C. lancifolium.*
    - Blade $1\frac{1}{2}$–2 in. broad.
      - Raceme simple.
        - Petiole as long as the blade . . 13. *C. Mannii.*
        - Petiole much shorter than the blade . 14. *C. thollonianum.*
      - Racemes panicled . . . . . 15. *C. Carsoni.*
  - Flowers medium-sized.
    - Blade 1 in. broad . . . . . 16. *C. inornatum.*
    - Blade 2 in. broad.
      - Raceme usually simple . . . . 17. *C. filipendulum.*
      - Racemes many, panicled . . . 18. *C. Orchidastrum.*
    - Blade $2\frac{1}{2}$–3 in. broad . . . . 19. *C. petiolatum.*
  - Flowers larger, about $\frac{1}{2}$ in. long . . . 20. *C. moniliforme.*

**Leaves thin, not distinctly petioled, laxly veined.
- Pedicels not articulated. Inflorescence corymbose.
  - Filament as long as the anther . . . 21. *C. tetraphyllum.*
  - Filament twice the length of the anther . 22. *C. Schimperi.*
- Pedicels articulated. Inflorescence racemose.
  - Leaves 3–4, superposed.
    - Flowers greenish.

Lower leaf cordate-ovate . . . . 23. *C. amplexicaule.*
Lower leaf oblong-lanceolate . . . 24. *C. blepharophyllum.*
Flowers yellow . . . . . 25. *C. vaginatum.*
Leaves basal.
Peduncle short.
Racemes dense.
Perianth $\frac{1}{6}$ in. long . . . . . 26. *C. pusillum.*
Perianth $\frac{1}{4}$ in. long.
Leaves 1–$1\frac{1}{2}$ in. broad.
Perianth white . . . . . 27. *C. brachystachyum.*
Perianth greenish.
Perianth-segments lanceolate . . 28. *C. stenopetalum.*
Perianth-segments oblong-lanceolate 29. *C. Menyharthi.*
Leaves 2 in. broad . . . . 30. *C. Schweinfurthii.*
Raceme lax . . . . . 31. *C. laxum.*
Peduncle long.
Perianth $\frac{1}{6}$ in. long.
Leaves 1–$1\frac{1}{2}$ ft. long . . . . 32. *C. gallabatense.*
Leaves 6–8 in. long.
Root-fibres not bearing tubers . . 33. *C. ukambense.*
Root-fibres bearing tubers . . . 34. *C. bukobense.*
Perianth $\frac{1}{4}$–$\frac{1}{3}$ in. long.
Peduncle pubescent . . . . 35. *C. puberulum.*
Peduncle glabrous.
Leaves ciliated . . . . 36. *C. ciliatum.*
Leaves not ciliated.
Leaves linear . . . . 37. *C. tenuifolium.*
Leaves lanceolate.
Keel of perianth-segments 1-nerved . 38. *C. floribundum.*
Keel of perianth-segments 3-nerved . 39. *C. Kirkii.*
Perianth $\frac{1}{3}$–$\frac{1}{2}$ in. long . . . . 40. *C. andongense.*
***Leaves firm, linear, closely veined.
Leaves pubescent over the surface.
Perianth $\frac{1}{6}$ in. long . . . . . 41. *C. vestitum.*
Perianth $\frac{1}{4}$ in. long . . . . . 42. *C. Fischeri.*
Leaves ciliated on the margin.
Pedicels very short . . . . . 43. *C. longifolium.*
Lower pedicels as long as the flowers.
Perianth-segments oblong . . . . 44. *C. affine.*
Perianth-segments linear . . . . 45. *C. brunneum.*
Leaves glabrous, not ciliated on the margin.
Racemes simple, lax . . . . . 46. *C. micranthum.*
Racemes simple, dense.
Leaves $\frac{1}{2}$–1 ft. long . . . . . 47. *C. tuberosum.*
Leaves $1\frac{1}{2}$–2 ft. long . . . . 48. *C. suffruticosum.*
Racemes forked . . . . . 49. *C. rhizomatosum.*
Racemes panicled.
Perianth glabrous.
Bracts lanceolate, acuminate . . . 50. *C. viridescens.*
Bracts ovate, minute . . . . 51. *C. polystachyum.*
Perianth pubescent . . . . . 52. *C. pubiflorum.*

1. **C. fusiforme,** *Rendle in Journ. Linn. Soc.* xxx. 419. Root-stock tuberous, $\frac{1}{2}$ in. diam.; root-fibres thick, fusiform. Leaves 5–6 to

a stem, linear, 6–8 in. long, ½ in. broad, narrowed into a short petiole, glabrous on the upper surface, hairy on the conspicuous ribs beneath. Peduncle pubescent, 2 in. long. Raceme nearly as long as the peduncle, 15–16-flowered; bracts ovate, acuminate, the lowest lanceolate, ¾ in. long; pedicels solitary or geminate, articulated below the middle. Perianth ⅜ in. long; segments lanceolate, 3–5-nerved in the keel. Anthers ⅛ in. long, as long as the filaments.

Mozamb. Dist. German East Africa: Unyamwezi; Uyui, *Taylor!*

No specimen in the Kew Herbarium.

2. **C. ramiferum,** *Rendle in Journ. Linn. Soc.* xxx. 421. Root-stock stout, finely setose at the crown; root-fibres long, fusiform below the tip. Leaves 7–9 to a stem, membranous, linear, 1 ft. or more long, 6–8 lin. broad, narrowed into a petiole 2–3 in. long. Peduncle leafless, 8–10 in. long. Racemes 3–4, lax, forming a panicle nearly 1 ft. long; bracts ovate, cuspidate, 4–5 lin. long; pedicels 3-nate, articulated near the apex. Perianth ¼ in. long; segments lanceolate, 5-nerved in the brown keel. Stamens nearly as long as the perianth; anthers 1–1¼ lin. long, shorter than the filaments.

Mozamb. Dist. German East Africa: between the coast and Uyui, *Taylor!*

No specimen in the Kew Herbarium.

3. **C. Afzelii,** *Baker in Journ. Linn. Soc.* xv. 323. Root-fibres cylindrical, fleshy. Leaves with a distinct petiole 2–5 in. long, and a thin glabrous lanceolate blade 5–6 in. long, 1–1¼ in. broad at the middle, narrowed gradually to the apex and base. Peduncle 1–2 in. long. Raceme dense, simple, oblong, 2–3 in. long; pedicels very short, ascending, articulated near the apex, the lower 3–4-nate; bracts small, deltoid-cuspidate. Flowers not seen. Capsule obovoid, emarginate, ⅓ in. long, ¼ in. diam.

Upper Guinea. Sierra Leone: under trees, at Wallia, *Scott-Elliot,* 4642! and without precise locality, *Afzelius! Don! Barry!*

4. **C. miserum,** *Rendle in Journ. Linn. Soc.* xxx. 420. Root-fibres short, tuberous at the tip. Leaves 4, lanceolate, ciliated on the edge, 4–5 in. long, 8 lin. broad, narrowed into a petiole 1½ in. long. Peduncle 5–6 in. long. Raceme simple, 3–4 in. long, dense in the upper part, lax downwards; pedicels short, 3-nate, articulated above the middle; bracts lanceolate, acuminate, the lower ¼–⅓ in. long. Perianth ⅙ in. long; segments oblong-lanceolate, 2–3-nerved on the keel. Anthers very small; filaments flattened.

Mozamb. Dist. German East Africa: between the coast and Uyui, *Taylor!*

No specimen in the Kew Herbarium.

5. **C. alismæfolium,** *Baker in Journ. Linn. Soc.* xv. 324. Root-stock oblique, cylindrical; root-fibres few, long, slender, bearing tubers at the end. Leaves 4–6 to a tuft; petiole distinctly channelled, 3–4 in. long; blade thin, glabrous, lanceolate, 4–6 in. long, ¾ in. broad low down, narrowed gradually to the acuminate apex, rather rounded at the

base. Peduncle short, slender. Raceme very lax, usually simple, 4–6 in. long; bracts lanceolate, the lower $\frac{1}{4}$–$\frac{1}{3}$ in. long; pedicels very short, articulated at the middle, the lower 2–3-nate. Perianth white, $\frac{1}{4}$ in. long; segments narrow, 3-nerved in the keel. Anthers small, oblong.

Upper Guinea. Cameroons: Bipinde, *Zenker*, 866! Batanga, *Bates*, 321!

Lower Guinea. Gaboon: banks of the Gaboon River, *Mann*, 1030! on rocks in the river bank at Mfoa, 85 miles east of Gaboon, *Bates*, 524! Island of Ndjole, Ogowe River, *Thollon*, 722!

6. **C. Holstii,** *Engl. Pfl. Ost-Afr. C.* 140. Root-fibres long, wiry, spreading, branched. Leaves about 6 to a tuft; petiole 3 in. long; blade moderately firm, lanceolate, glabrous, 4–5 in. long, $\frac{1}{2}$–$\frac{5}{8}$ in. broad at the middle, narrowed gradually to the base and apex. Peduncle slender, glabrous, angled, deeply sulcate, shorter than the leaves. Raceme simple, lax; bracts lanceolate, lower $\frac{1}{4}$ in. long; pedicels very short, lower fascicled. Perianth $\frac{1}{4}$ in. long; segments linear-oblong. Anthers small, oblong, as long as the filaments.

Mozamb. Dist. German East Africa: Usambara; Amboni, *Holst*, 2674!

7. **C. brevipes,** *Baker.* Rootstock oblique; root-fibres wiry. Leaves many to a stem; petiole slender, $\frac{1}{2}$ ft. long; blade membranous, glabrous, lanceolate, $\frac{1}{2}$ ft. long, 1 in. broad at the middle, narrowed gradually to the base and acute apex. Peduncle slender, 6–8 in. long, bearing 1–2 empty bracts. Raceme simple, very lax, finally 8–9 in. long; bracts small, ovate or lanceolate; lower pedicels 2–3-nate, $\frac{1}{4}$ in. long, articulated at the middle. Perianth $\frac{1}{4}$ in. long; segments linear. Capsule $\frac{1}{6}$ in. long, $\frac{1}{4}$ in. diam.

Mozamb. Dist. Portuguese East Africa: Makua; Namuli Hills, *Last!*

8. **C. bracteatum,** *Hua, Contr. Fl. Congo Franç. Lil.* 21. Root-stock short, oblique; root-fibres thickened; neck not setose. Leaves many; petiole channelled, 3–8 in. long; blade lanceolate, 3–7 in. long, reaching 1 in. or more in breadth, 12–15-nerved, membranous, slightly villous beneath. Peduncles 2–3, short, glabrous. Raceme very lax, $\frac{1}{2}$ ft. long; bracts lanceolate, the lower above 1 in. long; pedicels short, 2–3-nate, articulated above the middle. Perianth white, $\frac{1}{4}$ in. long; segments linear. Stamens nearly as long as the perianth.

Upper Guinea. Niger Territory: Nupe, *Barter*, 1314 (ex *Hua*).

Lower Guinea. French Congo; Ngoma, *Lecomte*, B104!

9. **C. scabrum,** *Baker.* Rootstock tuberous, crowned with ovate scales; root-fibres many, slender. Leaves 6–8 to a stem; petiole 3–4 in. long, channelled down the face; blade oblong-lanceolate, firm, scabrous, 6–9 in. long, $1\frac{1}{2}$–2 in. broad above the middle, narrowed very gradually to the base, not ciliated on the margin, with close raised densely pubescent ribs on the under surface. Peduncle very short. Raceme dense, simple, oblong, 2 in. long; pedicels short, ascending, articulated above the middle, the lower geminate; bracts small. Flowers not seen. Capsule subglobose, $\frac{1}{6}$ in. long.

Lower Guinea. Angola, *Welwitsch*, 3805!

10. **C. sparsiflorum,** *Baker in Journ. Linn. Soc.* xv. 325. Root-fibres long, slender, bearing tubers at the middle. Leaves about 5 to a stem; petiole slender, 4–5 in. long; blade membranous, glabrous, lanceolate, 6–7 in. long, 15–20 lin. broad at the middle, acute, narrowed very gradually to the base. Peduncles 3 to a tuft, very slender, 4–6 in. long. Racemes very lax, $\frac{1}{2}$ ft. long, simple or forked at the base; lower bracts lanceolate, $\frac{1}{2}$ in. long; pedicels short, articulated as the middle, the lower 3–4-nate. Flower not seen. Capsule $\frac{1}{6}$ in. long, $\frac{1}{4}$ in. diam.

Upper Guinea. Fernando Po, *Mann*, 388!

11. **C. macrophyllum,** *Aschers. in Schweinf. Beitr. Fl. Æthiop.* 294. Root-fibres long, slender, not bearing tubers. Leaves 4–5 to a stem; petiole channelled, $\frac{1}{2}$–1 ft. long; blade membranous, lanceolate, glabrous, 1–1$\frac{1}{2}$ ft. long, 2–3 in. broad at the middle, narrowed gradually to the base and apex. Peduncle $\frac{1}{2}$–1 ft. long, naked or bracteate. Raceme simple or branched at the base, dense, finally 6–8 in. long; pedicels ascending, articulated, $\frac{1}{4}$–$\frac{1}{2}$ in. long, the lower fascicled; bracts lanceolate, the lower $\frac{3}{4}$–1 in. long. Perianth $\frac{1}{3}$ in. long; segments lanceolate, with a laxly 3–5 nerved brown keel. Anthers linear, $\frac{1}{8}$ in. long, as long as the filaments. Capsule $\frac{1}{3}$ in. long.—Baker in Journ. Linn. Soc. xv. 323. *Anthericum macrophyllum*, A. Rich. Tent. Fl. Abyss. ii. 334.

Upper Guinea. Niger Territory: Nupe, *Barter!*

Nile Land. Galabat: banks of the River Gendua, *Schweinfurth*, 7! Abyssinia: near Jelajeranne, *Schimper*, 1837! and without precise locality, *Quartin-Dillon & Petit*, 183 (82)! British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 2051! Nyika country, near Mombasa, *Wakefield!*

Lower Guinea. Angola, *Welwitsch*, 3771! Malange, *Teuscz! Büttner*, 534!

South Central. South-East region of the Congo Free State, west of the Lualaba River, *Pogge*, 1479!

Mozamb. Dist. German East Africa: Kilimanjaro; below Marangu, 4000 ft., *Volkens*, 2136! and by the Dehu or Mue River, at the foot of Kilimanjaro, 2900 ft., *Volkens*, 2178! Usambara; Magila, *Kirk!* Portuguese East Africa: Morambala Mountain, 1500 ft., *Kirk!*

12. **C. lancifolium,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 260. Root-fibres many, cylindrical, not bearing tubers. Leaves about 6 to a stem; petiole slender, distinct, 5–6 in. long; blade ovate-lanceolate, thin, glabrous, 3–5 in. long, $\frac{3}{4}$–1 in. broad, acuminate, cuneate or rather rounded at the base. Peduncle slender, 3–4 in. long. Raceme simple, very lax, $\frac{1}{2}$–1 ft. long; bracts small, lanceolate; pedicels very short, articulated, the lower 3–4-nate. Perianth greenish-white, $\frac{1}{6}$ in. long; segments linear. Capsule globose, $\frac{1}{6}$ in. long.

Lower Guinea. Angola: Pungo Andongo, *Welwitsch*, 3772! 3773!

13. **C. Mannii,** *Baker.* Root-fibres dense, cylindrical. Leaves about 5 to a stem; petiole distinct, 6–8 in. long, dilated and clasping the stem low down; blade thin, glabrous, oblong-lanceolate, acuminate, 6–8 in. long, 18–21 lin. broad below the middle, rather rounded at the base. Peduncle slender, as long as the petiole. Raceme simple, very

lax, 6–8 in. long; bracts lanceolate, the lower $\frac{1}{2}$ in. long; pedicels short, articulated below the apex, the lower 2–3-nate. Perianth greenish-white, $\frac{1}{6}$ in. long; segments oblanceolate, keeled with brown. Stamens as long as the perianth; anthers much shorter than the filaments.

Lower Guinea. Gaboon: banks of the Gaboon River, *Mann!*

14. **C. thollonianum,** *Hua, Contr. Fl. Congo Franç. Lil.* 20. Rhizome oblique; crown not setose; root-fibres many, long, sometimes thickened. Leaves 3–6; petiole channelled, 2–4 in. long; blade oblong-lanceolate, 4–10 in. long, $1\frac{1}{2}$–2 in. broad at the middle, acute or acuminate; ribs about 20. Peduncle simple, 6–8 in. long, bearing 2–3 adpressed lanceolate bract-leaves. Raceme simple, lax, 8–10 in. long; bracts minute; pedicels 3–4-nate, about as long as the bracts, articulated at the middle. Perianth $\frac{1}{6}$ in. long, greenish; segments oblong, 3-nerved. Capsule $\frac{1}{4}$ in. long. Seeds 3–5 in a cell.

Lower Guinea. Southern French Congo: on the banks of streams in the forest of Mayumba, *Thollon,* 1225! and region of the River Niari, at Niounrou, *Lecomte,* 13!

No specimen at Kew.

15. **C. Carsoni,** *Baker.* Root-fibres long, fleshy, cylindrical. Leaves about 6 to a stem; petiole slender, 3–6 in. long; blade thin, glabrous, oblong-lanceolate, $\frac{1}{2}$ ft. long, 2 in. broad low down, broadly rounded at the base. Peduncle 6–8 in. long, leafless. Racemes many, very lax, ascending, 3–6 in. long, forming a rhomboid panicle; lower bracts lanceolate, $\frac{1}{2}$–$\frac{3}{4}$ in. long; pedicels ascending, articulated at the middle, the lower $\frac{1}{4}$ in. long, 2–3-nate. Perianth $\frac{1}{6}$ in. long, dull greenish. Anthers as long as the filaments.

Mozamb. Dist. British Central Africa: Urungu; Fwambo, 5000–6000 ft., *Carson,* 29 of 1893 collection!

Very near *C. Orchidastrum,* but the leaves broadly rounded at the base.

16. **C. inornatum,** *Gawl. in Bot. Mag. t.* 1071. Root-fibres densely fascicled, fleshy, cylindrical. Leaves 6–8 to a stem; petiole distinct, 3–4 in. long, sheathing the stem at the base; blade membranous, glabrous, oblong-lanceolate, acuminate, 6–8 in. long, an inch broad below the middle, narrowed gradually at the base. Peduncle slender, $\frac{1}{2}$–1 ft. long. Raceme lax, 6–8 in. long, simple or forked at the base; bracts lanceolate, the lower $\frac{1}{2}$–$\frac{3}{4}$ in. long; pedicels short, ascending, articulated at the middle, the lower 3–4-nate. Perianth greenish-white, $\frac{1}{4}$–$\frac{1}{3}$ in. long; segments lanceolate. Anthers rather shorter than the filaments. Capsule $\frac{1}{4}$ in. long.—Roem. et Schultes, Syst. Veg. vii. 453; Kunth, Enum. iv. 603; Baker in Journ. Linn. Soc. xv. 324.

Upper Guinea. Sierra Leone, *Afzelius!*

17. **C. filipendulum,** *Baker in Trans. Linn. Soc. ser. 2, Bot.* i. 260. Rootstock oblique; root-fibres slender, bearing tubers near the end. Leaves 6–8 to a stem; petiole winged, 3–4 in. long, clasping the stem

low down; blade thin, glabrous, oblong-lanceolate, 6–9 in. long, 1½–2 in. broad at the middle, narrowed gradually to the acuminate apex and the base. Peduncle ½–1 ft. long, naked or bearing a single small leaf. Raceme lax, ½ ft. long, usually simple; bracts lanceolate, the lower ⅛–½ in. long; pedicels articulated, the lower 3–4-nate, ¼–⅓ in. long. Perianth greenish white, ¼–⅓ in. long; segments 3-nerved in the keel. Anthers 1 lin. long, as long as the filaments. Capsule oblong, ⅓ in. long.

Lower Guinea. Angola: Golungo Alto, by wooded streams, *Welwitsch*, 3776!

18. **C. Orchidastrum,** *Lindl. in Trans. Hort. Soc.* vi. 78. Root-fibres fleshy, cylindrical. Leaves many to a stem; petiole distinct, 6–9 in. long; blade oblong-lanceolate, acuminate, membranous, 8–9 in. long, about 2 in. broad at the middle, narrowed gradually to both ends. Peduncle slender, 1 ft. or more long. Racemes many, very lax, 4–6 in. long, forming a lax rhomboid panicle; lower bracts lanceolate, ½–¾ in. long; pedicels ascending, articulated at the middle, the lower 3–4-nate, ¼–⅓ in. long. Perianth greenish, ⅙–¼ in. long; segments narrow. Anthers as long as the filaments. Capsule subglobose, ¼ in. long.—Bot. Reg. t. 813; Roem. et Schultes, Syst. Veg. vii. 453; Kunth, Enum. iv. 603; Baker in Journ. Linn. Soc. xv. 325, partly.

Upper Guinea. Sierra Leone: on Mount Gonkwi, near Ninia, Talla Hills, *Scott-Elliot*, 4995! and without precise locality, *Don!*

19. **C. petiolatum,** *Baker in Journ. Linn. Soc.* xv. 326. Root-fibres long, cylindrical, thickened at the end. Leaves 4–6 to a stem; petiole distinct, slender, 6–8 in. long; blade oblong, cuspidate, membranous, glabrous, 6–7 in. long, 2½–3 in. broad at the middle, cuneate or rather rounded at the base. Peduncle slender, leafless, 8–9 in. long. Racemes 3, lax, ascending, 4–5 in. long; bracts small, ovate, cuspidate; pedicels short, ascending, articulated at the middle, the lower 3–4-nate. Perianth dull green, ⅓ in. long; segments linear. Anther linear, ⅛ in. long, as long as the filaments. Capsule ¼ in. diam.

Upper Guinea. Cameroons: Barombi, *Preuss*, 191! Cameroon Mountain, 2000 ft., *Mann*, 2132!

20. **C. moniliforme,** *Rendle in Journ. Linn. Soc.* xxx. 418. Root-stock tuberous, moniliform; root-fibres few, fusiform. Produced leaves 3 to a stem, membranous, glabrous, shortly ciliated, the lowest small, ovate, with a clasping base, the upper lanceolate or ovate-lanceolate, 3–5 in. long, 9–15 lin. broad, the uppermost with a distinct petiole 1 in. long. Peduncle 2–4 in. long. Raceme short, simple, 5-flowered; bracts ovate, acuminate, white, scariose; pedicels short, solitary, articulated below the middle. Perianth nearly ½ in. long; segments lanceolate, 3-nerved in the brown keel. Anthers ⅛ in. long, nearly as long as the filaments.

Mozamb. Dist. German East Africa: Unyamwezi; Uyui, *Taylor!*

21. **C. tetraphyllum,** *Baker in Journ. Linn. Soc.* xv. 328. Root-fibres long, dense, bearing large tubers below the tip. Leaves 4–12 to

a stem, thin, glabrous, lanceolate, 4–6 in. long, ½–¾ in. broad, narrowed slightly to the sheathing base, not ciliated on the margin. Peduncle very short. Flowers many, corymbose; bracts linear, 6–9 lin. long; pedicels not articulated, ¼–¾ in. long. Perianth ¼ in. long; segments lanceolate, white with a 3-nerved brown keel. Stamens rather shorter than the perianth; anther and filament each 1 lin. long. Capsule subglobose, ¼ in. diam.—Engl. Hochgebirgsfl. Trop. Afr. 160. *Scilla tetraphylla*, Linn. fil. Suppl. 200; Kunth, Enum. iv. 331. *Phalangium abyssinicum*, Kunth, Enum. iv. 598. *Asphodelus Chamæmoly*, Hochst. ex Kunth, Enum. iv. 599. *Anthericum Chamæmoly*, Hochst. ex Rich. Tent. Fl. Abyss. ii. 332.

Nile Land. Eritrea: Hababb, 6000 ft., *Hildebrandt*, 375! Abyssinia: Tigre; Mount Kubbi, near Adowa, *Schimper*, 271! Wadjerat, *Quartin-Dillon & Petit*, 185! Waldubba, *Steudner*, 460! Amhara; Jenda, *Steudner*, 461! and without precise locality, *Schimper*, 322A! 322B!

22. **C. Schimperi,** *Engl. Hochgebirgsfl. Trop. Afr.* 161. Root-fibres many, long, fleshy, cylindrical. Leaves many to a rosette, thin, lanceolate, glabrous, laxly nerved, 3–4 in. long, ½ in. broad above the middle, narrowed gradually to the apex and channelled base. Flowers few in a nearly sessile corymb; pedicels long, not articulated; bracts large, lanceolate. Perianth ⅓ in. long; segments lanceolate, white with a brown keel. Stamens distinctly shorter than the perianth; filaments twice as long as the oblong anthers.

Nile Land. Abyssinia: Begemeder; Gafat, 8000–9000 ft., *Schimper*, 1203 of 1863 collection!

23. **C. amplexicaule,** *Baker in Journ. Linn. Soc.* xv. 325. Leaves about 3, clasping the lower part of the stem, superposed, chartaceous, glabrous, the lower cordate-ovate, the upper oblong, acute, 6–8 in. long, 1–1½ in. broad at the middle, narrowed gradually to the base. Peduncle hidden by the leaves, ½ ft. long. Racemes lax, simple or forked, 2–4 in. long; bracts small, deltoid or the lower lanceolate; pedicels very short, articulated, the lower 2–3-nate. Perianth ¼ in. long; segments linear. Capsule oblong, ⅓ in. long.

Mozamb. Dist. Lake Tanganyika, *Cameron!*

24. **C. blepharophyllum,** *Schweinf. ex Baker in Journ. Linn. Soc.* xv. 327. Root-fibres long, slender; root crowned with a dense mass of bristles. Leaves about 4, sheathing the base of the stem for some distance, the lowest small, the others lanceolate or oblong-lanceolate, moderately firm, glabrous, laxly veined, 4–8 in. long, ½–1¼ in. broad at the middle, narrowed to the base. Peduncle slender, shorter than the leaves. Raceme dense, 2–3 in. long, simple or forked at the base; bracts linear or lanceolate from a broad base, the lower ½–1 in. long; pedicels very short, articulated, the lowest 2–3-nate. Perianth dark green, ⅓ in. long; segments linear, 5-nerved in the keel. Anthers linear, ⅛ in. long, longer than the filaments. Capsule deeply emarginate, ⅓ in. long.

Upper Guinea. Sierra Leone: Falaba, 3500 ft., *Scott-Elliot*, 5306! near Makunde, *Scott-Elliot*, 5703!

Nile Land. Galabat, *Schweinfurth*, 9! British East Africa: Taita; Ndi Mountain, *Scott-Elliot*, 6278!

Mozamb. Dist. German East Africa: Karagwe, 4000–5000 ft., *Scott-Elliot*, 8205! British East Africa: Nyasaland; Elephant Marsh, North Nyasa, *Scott!* Shire Highlands, *Buchanan*, 135! Mount Malosa, 4000–6000 ft., *Whyte!* Mount Mlanje, *Whyte!* Mount Zomba, *Whyte & McClounie!* Fort Johnston, *Scott-Elliot*, 8407!

25. **C. vaginatum,** *Hua, Contr. Fl. Congo Franç. Lil.* 22. Crown of root densely setose. Produced leaves 3, clasping the base of the stem, rigid, closely ribbed, ciliated on the margin, the lower small, the others oblong-lanceolate, 6–10 in. long. Peduncle short, terete, hidden by the sheathing bases of the leaves. Racemes dense, 2–3 in. long, simple or forked; bracts ovate; pedicels very short, fascicled, articulated at the middle. Perianth-segments yellow, lanceolate, $\frac{1}{3}$ in. long. Stamens shorter than the perianth; anthers linear. Style short. Capsule winged, $\frac{1}{3}$ in. long. Ovules 10–15 in a cell.

North Central. French Congo: at the Mission Post on the Kemo River, a tributary of the Mobangi or Dua River, *Dybowski*, 744!

No specimen at Kew.

26. **C. pusillum,** *Schweinf. ex Baker in Journ. Bot.* 1878, 325. Rootstock an oblong tuber, bearing many slender fibres. Leaves about 4 to a tuft, oblong, spreading, membranous, glabrous, 4–5 in. long by half as broad, sessile, crisped at the margin. Raceme dense, simple, 1–2 in. long, sessile in the centre of the rosette of leaves; pedicels short, clustered, articulated; bracts lanceolate, membranous, the lower $\frac{1}{4}$ in. long. Perianth $\frac{1}{6}$ in. long; segments lanceolate, white with a greenish-brown keel. Stamens nearly as long as the perianth; anthers linear, shorter than the filaments. Capsule globose, $\frac{1}{4}$ in. diam.

Nile Land. Jur: Jur Ghattas, *Schweinfurth*, 2043!

27. **C. brachystachyum,** *Baker in Gard. Chron.* 1893, xiii. 710. Root-fibres cylindrical, fleshy. Leaves 6–8 to a stem, moderately firm, lanceolate, light green, glabrous, 6–8 in. long, 1–$1\frac{1}{2}$ in. broad at the middle, narrowed gradually to the apex and sessile base, much crisped and conspicuously ciliated on the margin. Peduncle very short. Raceme dense, oblong, branched at the base; pedicels very short, the lower geminate; lower bracts lanceolate, ciliated. Perianth white, $\frac{1}{4}$ in. long; segments oblong, reflexing from a basal cup. Stamens as long as the perianth; anthers oblong.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, *Buchanan!*

Described from a plant that flowered at Kew in the autumn of 1893.

28. **C. stenopetalum,** *Baker in Journ. Linn. Soc.* xv. 331. Rootstock small, globose; root-fibres slender, not bearing tubers. Leaves about 6 to a stem, thin, glabrous, lanceolate, 8–12 in. long, 1–$1\frac{1}{2}$ in.

broad at the middle, narrowed gradually to the apex and clasping base. Peduncle very short. Raceme dense, simple, oblong, 2–3 in. long; bracts lanceolate, $\frac{1}{4}$–$\frac{1}{2}$ in. long; pedicels very short, the lower 2–3-nate. Perianth greenish, $\frac{1}{4}$ in. long; segments lanceolate. Anthers as long as the filaments.

Upper Guinea. Niger Territory: Nupe, *Barter!*
Lower Guinea. Angola: Huilla, *Welwitsch*, 3768!
Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan*, 753!

29. **C. Menyharthi,** *Schinz mss. in Herb. Hort. Bot. Vind.* Root-fibres dense, cylindrical. Leaves about 6 in a basal rosette, lanceolate, sessile, membranous, 6–9 in. long, 1–1$\frac{1}{2}$ in. broad at the middle, narrowed gradually to the base and apex, glabrous on the margin. Peduncle scarcely any. Raceme dense, simple, oblong, 2–3 in. long; pedicels very short, erecto-patent, 2–3-nate; bracts lanceolate, longer than the flowers. Perianth dull greenish, $\frac{1}{4}$ in. long; segments oblong-lanceolate. Stamens nearly as long as the perianth; anthers oblong, small. Capsule subglobose, $\frac{1}{4}$ in. long.

Mozamb. Dist. British Central Africa: Northern Zambesia, Boruma, *Menyharth*, 565!

Flowered in the Vienna Gardens from seeds received in 1891.

Very near the Indian *C. breviscapum*, Dalz.

30. **C. Schweinfurthii,** *Baker.* Root-fibres many, long, slender. Leaves 5–6 to a stem, oblong-lanceolate, membranous, glabrous, not distinctly petiolate, 12–15 in. long, 2 in. broad at the middle, narrowed gradually to the acute apex and channelled clasping base. Peduncle 2–3 in. long. Raceme 2–3 in. long, dense, oblong, simple or branched at the base; pedicels short, ascending, articulated at the middle, the lower 2–3-nate; bracts lanceolate, the lower $\frac{1}{2}$–$\frac{3}{4}$ in. long. Perianth $\frac{1}{4}$ in. long, greenish; segments linear-oblong. Stamens as long as the perianth; anthers linear, rather shorter than the filaments. Capsule $\frac{1}{6}$ in. long, $\frac{1}{4}$ in. diam.

Nile Land. Jur: Jur Ghattas, *Schweinfurth*, 1968! 2068!

31. **C. laxum,** *R. Br. Prodr.* 277. Root-fibres very slender. Leaves many to a tuft, linear, membranous, glabrous, $\frac{1}{2}$–1 ft. long, $\frac{1}{4}$–$\frac{3}{4}$ in. broad at the middle, narrowed gradually to the acute apex and sheathing base. Peduncle very slender, much shorter than the leaves. Racemes very lax, simple or forked, 3–12 in. long; bracts small, lanceolate, membranous; pedicels short, articulated at the middle, the lower geminate. Perianth white, $\frac{1}{8}$–$\frac{1}{6}$ in. long; segments 3-nerved on the keel. Stamens nearly as long as the perianth; anthers as long as the filaments. Capsule globose, $\frac{1}{4}$ in. diam.—*C. laxiflorum*, Baker in Journ. Linn. Soc. xv. 328. *C. falcatum*, Baker in Saund. Ref. Bot. t. 333. *C. abyssinicum*, Kotschy & Peyr. Plant Tinn. 46. *C. paviflorum*, Hochst. ex Kotschy & Peyr. l.c. under 69, *C. sp. C. debile*, Baker in Trans. Linn. Soc. ser. 2, Bot. i. 260.

Upper Guinea. Niger Territory: Nupe, *Barter*, 1514! Niger Delta; Grand Bassa, *Vogel*, 41!

Nile Land. Abyssinia: Gursarfa, 3400 ft., *Schimper*, 2231! British East Africa: Malinde, at the mouth of the River Sabaki, *Kirk!*

Lower Guinea. Corisco Bay: River Kongue, *Mann*, 1876! Loango, *Thollon*, 1223! Angola, *Welwitsch*, 3769!

32. **C. gallabatense,** *Schweinf. ex Baker in Journ. Linn. Soc.* XV. 325. Rootstock horizontal; root-fibres dense, long, slender. Leaves 6–8 to a stem, thin, glabrous, lanceolate, 1–1½ ft. long, 1½–2 in. broad at the middle, narrowed gradually from the middle to the narrow clasping base, not distinctly petiolate. Peduncle slender, a foot long below the panicle. Racemes many, slender, ascending, the end one 6–9 in. long; bracts small, ovate; pedicels short, ascending, articulated at the middle, the lower 2–3-nate. Perianth dull, greenish-white, ⅙ in. long; segments lanceolate. Anthers $\frac{1}{12}$ in. long, as long as the filaments. Capsule ¼ in. diam.—*C. Orchidastrum*, Baker in Journ. Linn. Soc. xv. 325, ex parte: Martelli, Fl. Bogos. 85.

Nile Land. Galabat: Matamma, *Schweinfurth*, 10! Eritrea: Keren, 4500 ft., *Beccari*, 185! British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 1894!

Mozamb. Dist. Portuguese East Africa: Lower Zambesi, Lupata, *Kirk!* British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 199! Zomba and vicinity, 2500–3500 ft., *Whyte!* Masuka plateau, 6500–7000 ft., *Whyte!* Fort Young, *Nicholson!* and without precise locality, *Buchanan*, 57!

33. **C. ukambense,** *Baker.* Rootstock a globose tuber; root-fibres many, slender, cylindrical, Leaves 6–9 to a stem, oblong-lanceolate, membranous, glabrous, not distinctly petiolate, 5–6 in. long, ¾–1¼ in. broad at the middle, laxly and distinctly veined, narrowed gradually to the base and apex. Peduncle shorter than the leaves. Racemes 3, lax, the end one much the longest, about 3 in. long; bracts linear, the lower ½–¾ in. long; pedicels very short, the lower 2–3-nate. Perianth greenish, ⅙ in. long; segments oblong. Anthers minute, oblong, much shorter than the filaments.

Nile Land. British East Africa: Ukamba; Kitui, *Hildebrandt*, 2650!

34. **C. bukobense,** *Engl. Pfl. Ost-Afr. C.* 139. Near *C. sparsiflorum*, Baker. Root-fibres filiform, bearing tubers at the middle. Leaves thin, lanceolate, very acute, narrowed gradually to the base, scarcely half as long as the peduncle. Racemes very lax; bracts lanceolate; pedicels 3–4-nate, articulated above the middle. Flowers small. Capsule emarginate, ¼ in. long, rather broader than long.

Mozamb. Dist. German East Africa: Karagwe; Bukoba on Lake Victoria *Stuhlmann!*

Var. *kilimandscharicum*, Engl. loc. cit. Leaves 7–8, lanceolate, membranous, 6–8 in. long, ¾ in. broad, narrowed gradually to a channelled base. Stem slender, ½–1 ft. long. Raceme simple or forked at the base; bracts linear, acuminate, the lower ¾–1 in. long; pedicels ¼ in. long, lower geminate. Perianth-segments lanceolate, ⅙ in. long, whitish, with a green keel. Capsule ¼–⅓ in. diam. more deeply emarginate; valves rather broader.

Mozamb. Dist. German East Africa: Kilimanjaro, above Marangu, 6800 ft., *Volkens*, 1294!

No specimen in the Kew Herbarium.

35. **C. puberulum,** *Engl. Pfl. Ost-Afr. C.* 139. Near *C. gallabatense, Schweinf.* Rootstock thick; root-fibres filiform; rudimentary leaves many, very broad. Produced leaves thin, broadly lanceolate, acuminate, crisped at the broad pale margin, $\frac{1}{3}$–$\frac{1}{4}$ the length of the peduncle. Peduncle densely pubescent. Racemes dense, ascending, panicled; bracts lanceolate; pedicels short. Perianth $\frac{1}{3}$ in. long; segments lanceolate. Filaments as long as the anthers.

Mozamb. Dist. German East Africa: Ukome, Emin Pasha Gulf, Lake Victoria Nyanza, ex *Engler*, without mention of the collector.

No specimen in the Kew Herbarium.

36. **C. ciliatum,** *Baker in Journ. Bot.* 1878, 325. Root-fibres many, cylindrical; neck crowned with a ring of bristles. Leaves 3–4, with a sheathing base and a moderately firm lanceolate blade, 4–6 in. long, 1 in. broad low down, distinctly ciliated on the margin. Peduncle slender, glabrous, as long as or shorter than the leaves. Racemes usually simple, dense upwards, about 3 in. long; lower pedicels 3–4-nate, $\frac{1}{8}$–$\frac{1}{6}$ in. long; bracts small, ovate, membranous. Perianth $\frac{1}{4}$ in. long; segments oblong. Stamens nearly as long as the perianth; anthers linear, as long as the filaments. Capsule $\frac{1}{3}$ in. long.

Nile Land. Jur: Kutschuk (Kurshook)-Ali, *Schweinfurth*, 1521!

37. **C. tenuifolium,** *Baker in Kew Bulletin*, 1895, 228. Leaves 5–6 to a stem, thin, linear, glabrous, 1–1$\frac{1}{2}$ ft. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad at the middle, much narrowed to the base, often crisped towards the margin. Peduncle long, slender, glabrous, not angled. Raceme lax, cylindrical, finally 6–9 in. long; bracts minute, ovate-lanceolate; pedicels erecto-patent, articulated below the middle, all solitary, the lower $\frac{1}{4}$–$\frac{1}{3}$ in. long. Perianth $\frac{1}{3}$ in. long; segments linear, white, with a green keel. Anthers small, linear-oblong, much shorter than the glabrous filaments. Capsule subglobose, deeply emarginate, $\frac{1}{3}$ in. long.

Nile Land. British Somaliland: Wadaba, *Miss Edith Cole! Mrs. E. Lort-Phillips!*

38. **C. floribundum,** *Baker.* Leaves membranous, lanceolate, glabrous, sessile, above a foot long, 1–2 in. broad at the middle, narrowed gradually to a base $\frac{3}{4}$–1 in. broad, laxly veined, not ciliate on the margin. Inflorescence a panicle composed of 5 lax cylindrical ascending racemes a foot long; branch-bracts lanceolate, 3–4 in. long; lower flowers 3–4-nate; pedicels articulated, pubescent, $\frac{1}{6}$–$\frac{1}{4}$ in. long; flower-bracts small, lanceolate. Perianth-segments lanceolate, $\frac{1}{4}$ in. long, with a faint 1-nerved green keel. Stamens nearly as long as the perianth. Anthers small; capsule globose, deeply lobed.

Mozamb. Dist. British Central Africa: Nyasaland; Zomba and vicinity, 2500–3500 ft., *Whyte!*

39. **C. Kirkii,** *Baker in Gard. Chron.* 1882, xvii. 108. Root-fibres densely tufted, cylindrical, not bearing tubers. Leaves about 6 to a stem, thin, glabrous, lanceolate, 1½ ft. long, ½–1 in. broad at the middle, narrowed gradually to the apex and clasping base. Peduncle shorter than the leaves, with a large leaf from the middle. Raceme lax, simple, 4–5 in. long; bracts scariose, lanceolate, the lower ¾–1 in. long; pedicels short, ascending, articulated above the middle, the lower geminate. Perianth white, ¼ in. long; segments oblong, 3-nerved in the keel. Stamens nearly as long as the perianth; anthers ½ in. long, shorter than the filaments.

Mozamb. Dist. Zanzibar, cultivated specimen, *Kirk !*

Described from a plant that flowered at Kew in the summer of 1882 !

40. **C. andongense,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 260. Root-fibres many, long, spreading, fleshy, cylindrical, some bearing tubers. Produced leaves about 6 to a tuft, sheathing the base of the stem, oblong-lanceolate, membranous, glabrous, laxly ribbed, 1–1½ ft. long, ⅔ in. broad at the middle, pale and rather crisped at the edge. Peduncle terete, as long as the leaves. Racemes many, forming a lax panicle 1–2 ft. long; pedicels articulated at the middle, the lower 5–6-nate, finally 1 in. long; lower bracts lanceolate, ½ in. long. Perianth ⅓–½ in. long; segments linear, white, with a 3-nerved green keel, spreading from the top of a basal cup. Anthers large, linear. Capsule oblong, ⅓–½ in. long.—*C. longipes*, Baker in Journ. Bot. 1878, 325.

Nile Land. Jur: Jur Ghattas, *Schweinfurth,* 1801 ! 2045 !

Lower Guinea. Angola: Pungo Andongo, *Welwitsch,* 3770 ! *Teuscz !*

Mozamb. Dist. German East Africa: Unyamwezi; Uyui, *Taylor !* British Central Africa: Nyasaland; Shire Highlands, in rocky places, *Buchanan,* 200 !

41. **C. vestitum,** *Baker in Journ. Linn. Soc.* xv. 326. Root-fibres long, slender, not bearing tubers. Leaves many to a stem, firm, linear, closely ribbed, pubescent, 6–10 in. long, ¼ in. broad, not petiolate. Peduncle slender, much shorter than the leaves. Raceme lax, 3–4 in. long, simple or forked at the base; bracts minute, ovate, cuspidate; pedicels geminate, unequal, spreading, articulated at the middle, the longer ¼–⅓ in. long. Perianth ⅙ in. long, greenish; segments oblanceolate, 3-nerved in the keel. Stamens nearly as long as the perianth; anthers oblong, shorter than the filaments. Capsule ¼–⅓ in. diameter.

Mozamb. Dist. Portuguese East Africa: Lower Zambesi, at Shupanga, *Kirk !*

42. **C. Fischeri,** *Baker.* Root-fibres slender, not bearing tubers; neck crowned with bristles. Leaves 3–4, short, firm, linear, densely pubescent. Peduncle slender, pubescent, 3–4 in. long. Raceme lax, simple, 2–3 in. long; pedicels short, solitary, articulated at the middle; bracts lanceolate, minute, membranous. Perianth ¼ in. long; segments linear-oblong, white, keeled with green. Stamens rather shorter than the perianth; filaments glabrous, longer than the anthers. Capsule

$\frac{1}{6}$ in. diameter, acutely angled, broader than long.—*Anthericum Fischeri*, Baker in Engl. Jahrb. xv. 468.

Mozamb. Dist. German East Africa: Usmawo; between Magu and Kageyi, on Lake Victoria Nyanza, *Fischer*, 591!

43. **C. longifolium,** *Schweinf. Beitr. Fl. Æthiop.* 294. Rootstock horizontal, as thick as a man's finger, crowned with copious bristles; root-fibres many, long, cylindrical, not bearing tubers. Leaves about 6 to a stem, firm, linear, acuminate, closely ribbed, ciliate on the margin, not petiolate, 1–1$\frac{1}{2}$ ft. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad. Peduncle leafless, as long as the leaves. Raceme dense, simple, 3–5 in. long; bracts small, lanceolate, scariose; pedicels very short, ascending at the apex, the lower 2–3-nate. Perianth $\frac{1}{3}$ in. long; segments lanceolate. Stamens as long as the perianth; anthers small. Capsule deeply emarginate, $\frac{1}{4}$–$\frac{1}{3}$ in. long.—Baker in Journ. Linn. Soc. xv. 327. *Anthericum longifolium*, A. Rich. Tent. Fl. Abyss. ii. 333.

Nile Land. Galabat: Matamma, *Schweinfurth*, 8! Abyssinia, *Quartin-Dillon!*

44. **C. affine,** *Baker in Trans. Linn. Soc.* xxix. 160, *t.* 104. Root-fibres many, wiry, not bearing tubercles; root-crown with a few bristles. Leaves 6–8 to a stem, linear, acuminate, firm, closely ribbed, not petiolate, ciliate on the margin, 12–15 in. long. $\frac{3}{4}$–1 in. broad. Peduncle leafless, nearly as long as the leaves. Racemes simple, 3–9 in. long, dense upwards; bracts large, linear, the lowest 1 in. long; pedicels ascending, articulated at the middle, the lowest geminate, $\frac{1}{2}$ in. long. Perianth white, $\frac{1}{2}$ in. long; segments oblong, 3-nerved in the brown keel. Stamens much shorter than the perianth; anthers linear, longer than the filaments. Capsule globose, $\frac{1}{3}$ in. long.

Nile Land. German East Africa: Unyamwezi; in swamps near Rubugwa, 3800 ft., *Speke & Grant!*

45. **C. brunneum,** *Baker.* Roots not seen. Leaves several, erect, linear, 9–12 in. long, $\frac{1}{4}$–$\frac{1}{2}$ in. broad, clasping the base of the stem narrowed gradually to a long point, moderately firm, distinctly ciliated on the white margin, glabrous on the surface. Peduncle simple, stiffly erect, subterete, shorter than the leaves. Raceme lax, simple, 3 in. long; pedicels clustered, $\frac{1}{4}$ in. long, ascending, articulated at the middle. Perianth-segments linear, brownish, $\frac{1}{4}$ in. long. Capsule quadrate, acutely angled, $\frac{1}{3}$ in. diam.

Nile Land. German East Africa: Usaramo; at Mboamaji, near Dar-es-Salam, *Stuhlmann*, 6031!

46. **C. micranthum,** *Baker in Journ. Bot.* 1878, 325. Root-fibres wiry, not bearing tubers; neck crowned with a dense ring of fibres. Produced leaves firm, linear, glabrous, 4–6 in. long, $\frac{1}{4}$ in. broad. Peduncle slender, leafless, terete, as long as the leaves. Raceme long, lax, simple or deeply forked, finally 6–8 in. long; pedicels very short, articulated at the middle, lower 3–4-nate; bracts minute. Perianth

greenish-white, $\frac{1}{8}$ in. long; segments linear, with a laxly 3-nerved keel. Stamens nearly as long as the perianth; anthers oblong, minute. Capsule $\frac{1}{6}$ in. diam.

Nile Land. Jur: at Kurshook Ali's Seriba, *Schweinfurth*, 1745!

47. **C. tuberosum,** *Baker in Journ. Linn. Soc.* xv. 332. Root-fibres very dense, bearing large tubers at the end. Leaves 6–10 to a stem, moderately firm, closely ribbed, lanceolate, glabrous, $\frac{1}{2}$–1 ft. long, $\frac{1}{2}$–1 in. broad at the middle. Peduncle shorter than the leaves. Raceme dense, 2–4 in. long, usually simple; bracts lanceolate, acuminate, the lower 6–9 lin. long; pedicels short, ascending, articulated at the middle, the lower 2–3-nate. Perianth white, $\frac{1}{2}$ in. long; segments oblong, laxly nerved on the keel. Stamens distinctly shorter than the perianth; anthers $\frac{1}{6}$ in. long, longer than the filaments. Capsule obovoid, $\frac{1}{3}$ in. long.—Engl. Hochgebirgsfl. Trop. Afr. 161. *Anthericum ornithogaloides*, Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 332. *Phalangium ornithogaloides*, Schweinf. Beitr. Fl. Æthiop. 294.

Nile Land. Eritrea: Habab, *Hildebrandt*, 376! Galabat: Matamma, *Schweinfurth*, 6! *Steudner*, 455! Abyssinia: Samen; on the sides of a mountain near Derragonsel, *Schimper*, 1261! Wöchni, *Steudner*, 456! and without precise locality, *Schimper*, 561!

Mozamb. Dist. German East Africa: Kilimanjaro; below Marangu, 3000 ft., *Volkens*, 2163!

Also in Peninsular India.

48. **C. suffruticosum,** *Baker in Journ. Bot.* 1878, 326. Rootstock as thick as a man's finger. Leaves a dozen or more in a radical rosette, moderately firm, glabrous, $1\frac{1}{2}$–2 ft. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad at the middle, acuminate, closely ribbed. Peduncle leafless, terete, glabrous, 1 ft. long. Racemes simple, dense, 2–3 in. long; pedicels very short, ascending, articulated at the middle, the lower 2–3-nate; bracts lanceolate, acuminate, the lower $\frac{1}{2}$ in. long. Perianth $\frac{1}{2}$ in. long; segments white, 3-nerved in the brown keel. Stamens nearly as long as the perianth; anthers large, linear; filaments short.

Nile Land. British East Africa: Nyika country, near Mombasa, *Wakefield!*

49. **C. rhizomatosum,** *Baker in Gard. Chron.* 1885, xxiv. 230. Rootstock vertical, $\frac{1}{3}$ in. diam., bearing many superposed relics of old leaves. Produced leaves about 6 to a stem, firm, linear, acuminate, glabrous, closely ribbed, not petiolate, 6–9 in. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad. Peduncle slender, subterete, leafless, shorter than the leaves. Racemes 2, lax, erect, 3–4 in. long; bracts small, ovate, cuspidate, white, scariose; pedicels very short, the lower geminate. Perianth $\frac{1}{3}$ in. long; segments oblong, obtuse, white with a laxly 3-nerved brown keel. Anthers linear, $\frac{1}{6}$ in. long; filaments very short.

Mozamb. Dist. Zanzibar, cultivated specimen, *Kirk!*

Described from a plant that flowered at Kew, August, 1885.

May be an *Anthericum*.

50. **C. viridescens,** *Engl. Pfl. Ost-Afr. C.* 140. Leaves many, linear, acuminate, complicate, 1½ ft. long, ½ in. broad at the middle, closely ribbed, glabrous. Peduncle with panicle 3–3½ ft. long. Branches of panicle lax, ascending; bracts small, lanceolate; pedicels 3–5-nate, ½–¾ in. long, articulated above the base. Perianth cylindrical; segments linear, ⅓ in. long, greenish, with a 3-nerved green keel. Stamens much shorter than the perianth; anthers oblong, small. Capsule obovoid, acutely angled, pale green, ¼ in. long.

Mozamb. Dist. German East Africa: Kilimanjaro, below Marangu, 8000 ft. *Volkens,* 2155!

No specimen at Kew. The specimens distributed at Berlin under the name of *Cholorophytum viridescens,* both in the Kew and British Museum Herbaria, belong to a species of *Schizoglossum!*

51. **C. polystachyum,** *Baker in Journ. Bot.* 1878, 326. Root-fibres cylindrical, fleshy; neck crowned with a few bristles. Produced leaves about 6 to a stem, moderately firm, linear, glabrous, a foot long, ¼–⅓ in. broad, not narrowed to the base. Peduncle leafless, terete, glabrous, as long as the leaves. Racemes several, panicled, lax, erecto-patent, the lower forked; pedicels ⅙–¼ in. long, articulated at the middle, the lower 3–4-nate; bracts minute, ovate. Perianth campanulate, ⅛ in. long; segments green, with a white margin. Stamens nearly as long as the perianth; anthers minute, oblong.

Nile Land. Jur: Jur Ghattas, *Schweinfurth,* 1838!

52. **C. pubiflorum,** *Baker in Journ. Linn. Soc.* xv. 329. Root-stock tuberous, horizontal; root-fibres cylindrical. Leaves 6–10 to a stem, linear, glabrous, closely ribbed, moderately firm, 2–3 ft. long, 6–9 lin. broad, not narrowed to the base. Peduncle 2–3 ft. long, sub-terete. Racemes 3–5, very lax, ascending, the end one 9–12 in. long; bracts all small, ovate; pedicels articulated at the middle, the lower 3–4-nate, finally ⅓–½ in. long. Perianth greenish-white, pubescent, ⅓ in. long; segments linear-oblong, laxly 3-nerved on the back. Stamens nearly as long as the perianth; anthers 1/12 in. long, much shorter than the filaments. Capsule ⅙ in. long, ¼ in. diam.

Mozamb. Dist. German East Africa: banks of the Boruma River, *Kirk!* Portuguese East Africa: Zambesi Delta, *Kirk!* Shimwara Hills, near the mouth of the River Shire, *Kirk,* 237! British East Africa: Nyasaland, *Buchanan,* 191!

Imperfectly-known species.

53. **C. Tinneæ,** *Baker in Journ. Linn. Soc.* xv. 333. Whole plant quite glabrous. Root-leaves unknown. Peduncle very slender, ½–1 ft. long, bearing several linear reduced leaves. Raceme very lax, ½ ft. long; bracts lanceolate, minute; pedicels very short, ascending, the lower 2–3-nate. Perianth ⅕ in. long; segments oblong, 3-nerved on the keel. Stamens rather shorter than the perianth; anthers linear, twice as long as the filaments. Ovules 12 in a cell. *Chlorophytum sp.* Kotschy & Peyr. Plant. Tinn. 46, t. 23 B.

Nile Land. British East Africa: Jur, *Miss Tinné.*

15. **DASYSTACHYS**, Baker ; Benth. et Hook. f. Gen. Plant. iii. 789.

Perianth polyphyllous, campanulate; segments oblong, subequal, with an obscurely 1-nerved keel. Stamens 6, as long as or longer than the perianth ; anthers small, oblong, versatile ; filaments slightly flattened. Ovary sessile, globose, deeply 3-lobed, 3-celled ; ovules few, superposed; style subulate, declinate ; stigma capitate, minute. Capsule deeply 3-lobed, loculicidally 3-valved. Seeds flattened ; testa black ; albumen fleshy ; embryo short, cylindrical.—Rootstock tuberous, with many slender root-fibres. Leaves radical, linear or lanceolate. Racemes many-flowered, dense, usually simple, subspicate ; bracts persistent. Flowers small, white.

Endemic in Tropical Africa.

Stamens not exserted.
- Perianth $\frac{1}{8}$ in. long . . . . . 1. *D. gracilis.*
- Perianth $\frac{1}{6}$ in. long.
  - Leaves linear.
    - Peduncle shorter than the leaves . . . 2. *D. drimiopsis.*
    - Peduncle as long as the leaves . . . 3. *D. polyphylla.*
    - Peduncle longer than the leaves . . . 4. *D. crassifolia.*
  - Leaves lanceolate.
    - Leaves 2–4 in. long . . . . . 5. *D. densiflora.*
    - Leaves 1 ft. or more long . . . . 6. *D. decorata.*
- Perianth $\frac{1}{4}$ in. long.
  - Peduncle short . . . . . 7. *D. marginata.*
  - Peduncle long.
    - Leaves 3–4 . . . . . 8. *D. pleiostachya.*
    - Leaves 5–8.
      - Leaves falcate, 6–9 in. long . . . 9. *D. falcata.*
      - Leaves straight, 2–2$\frac{1}{2}$ ft. long . . 10. *D. aurea.*
- Perianth $\frac{1}{3}$ in. long . . . . . 11. *D. campanulata.*

Stamens exserted.
- Perianth $\frac{1}{6}$ in. long.
  - Leaves linear . . . . . 12. *D. debilis.*
  - Leaves lanceolate . . . . . 13. *D. Grantii.*
- Perianth $\frac{1}{4}$–$\frac{1}{3}$ in. long.
  - Peduncle bearing 2–3 reduced leaves . . 14. *D. colubrina.*
  - Peduncle bearing several reduced leaves . 15. *D. papillosa.*

1. **D. gracilis,** *Baker*. Root not seen. Leaves 4–6, sessile, linear, erect, glabrous, thin, 4–5 in. long, $\frac{1}{6}$–$\frac{1}{4}$ in. broad. Peduncle slender, naked, as long as the leaves. Raceme dense, subspicate, cylindrical, 1–1$\frac{1}{2}$ in. long, $\frac{1}{4}$–$\frac{1}{3}$ in. diam. ; bracts subulate, persistent, as long as the flowers. Perianth campanulate, $\frac{1}{8}$ in. long; segments linear-oblong, white, with a 1-nerved brown keel. Stamens shorter than the perianth. Style exserted.

Nile Land. British East Africa : Taita ; at Mbuyuni, in dry sand, *Scott-Elliot*, 6193 !

2. **D. drimiopsis,** *Baker ex Benth. in Gen. Plant.* iii. 789. Root-stock tuberous, with copious slender fibres ; old leaves not splitting into

fibres. Produced leaves 3, linear, erect, glabrous, moderately firm, 1–1½ ft. long, ⅓–½ in. broad at the middle, sheathing the stem at the base. Peduncle leafless, glabrous, 3–12 in. long. Raceme dense, usually simple, subspicate, 3–6 in. long; rhachis sulcate, pubescent; bracts subulate from a dilated base, ¼–½ in long. Perianth campanulate, ⅙ in. long; segments lanceolate, white with a brown keel. Stamens as long as the perianth; anthers linear, ⅛ in. long. Style much exserted. Capsule ¼ in diam.—Bot. Mag. t. 7580. *Anthericum drimiopsis*, Baker in Journ. Linn. Soc. xv. 301.

Mozamb. Dist. Portuguese East Africa: Lower Zambesi; at Shupanga, in damp places, *Kirk !* and between Lupata and Tete, *Kirk !* British Central Africa: Northern Zambesia; Boruma, *Menyharth*, 923! Nyasaland; Shire Highlands, *Buchanan*, 110! between Kondowe and Karonga, *Whyte !* plateau of Mount Zomba, 5000–6000 ft., *Whyte !*

3. **D. polyphylla,** *Baker.* Stem 2 in. long below the rosette of leaves, clothed with the copious fibrous relics of old leaves. Leaves 8–9 in a rosette, erect, linear, moderately firm, glabrous, 1–1½ ft. long, ½ in. broad at the middle, tapering gradually to the acuminate apex and clasping base. Peduncle leafless, glabrous, nearly as long as the leaves. Raceme 4 in. long, dense, cylindrical, with a short fork at the base; pedicels very short; bracts small, ovate or lanceolate scariose. Perianth campanulate, ⅙ in. long; segments oblong-lanceolate, keeled with brown. Stamens not exserted. Capsule ¼ in. diam.

Mozamb. Dist. German East Africa: Mount Kilimanjaro, 5000 ft., *Johnston !*

4. **D. crassifolia,** *Baker.* Root of many slender fibres; neck crowned with a ring of bristles. Rudimentary leaves spotted on the back with claret-purple. Produced leaves linear, thick, rigid, glabrous, a foot long, strongly nerved and keeled. Peduncle simple, flexuose, 1½–2 ft. long, bearing 2–3 reduced leaves. Raceme dense, subspicate, 3 in. long; bracts subulate from a dilated base, ¼–½ in. long. Perianth campanulate, ⅙ in. long; segments oblong-lanceolate, white with a 1-nerved brown keel. Stamens shorter than the perianth; anthers small, oblong. Style much exserted.

Mozamb. Dist. German East Africa: between Lake Rukwa and Lake Tanganyika, 6000 ft., *Nutt !* British Central Africa: Urungu; Fwambo, 5250 ft., *Nutt !*

5. **D. densiflora,** *Baker in Engl. Jahrb.* xv. 470. Leaves ascending, glabrous, lanceolate, 2–4 in. long, ⅓–½ in. broad at the middle, crisped at the margin. Peduncle shorter than the leaves, simple or forked, pubescent. Raceme dense, oblong, subspicate, 1½–2 in. long; pedicels very short; bracts large, lanceolate. Perianth campanulate, ⅙ in. long; segments oblong, keeled with red brown. Stamens as long as the perianth.—*Chlorophytum densiflorum*, Engl. in Engl. Jahrb. xv. 470.

Lower Guinea. Angola: Malange, *Teuscz*, 313!

No specimen at Kew.

6. **D. decorata,** *Baker.* Root densely crowned with fibres. Rudimentary leaves lanceolate, with many transverse bands of red brown. Produced leaves 3–4, with long clasping base and a lanceolate thin glabrous blade a foot or more long, an inch broad, not ciliated on the edge. Peduncle terete, 2–3 ft. long, bearing several reduced leaves. Raceme simple, cylindrical, 6–8 in. long; pedicels very short; bracts subulate from an ovate base, the lower an inch long. Perianth white, $\frac{1}{6}$ in. long; segments oblong, with a 1-nerved keel. Stamens included; anthers small, oblong.

Mozamb. Dist. British Central Africa: Urungu; Fwambo, 5000 ft., *Carson*, 26 of 1893 collection!

7. **D. marginata,** *Baker.* Rootstock thick, woody, annulate; root-fibres short; crown sparsely setose. Leaves 4, lanceolate, subacute, glabrous on the surface, densely ciliated on the thickened edge, reaching 10 in. long, $\frac{1}{2}$–1 in. broad. Peduncle naked, leafless, subterete, 5–6 in. long. Raceme dense, oblong, cylindrical, $2\frac{1}{2}$ in. long; bracts subulate, lower 8–9 lin. long. Perianth $\frac{1}{4}$ in. long; segments oblong-lanceolate, with a brown central rib. Anthers oblong, $\frac{1}{12}$ in. long.—*Chlorophytum* (*Dasystachys*) *marginatum*, Rendle in Journ. Linn. Soc. xxx. 422.

Mozamb. Dist. German East Africa: Unyamwezi; Uyui, *Taylor!*

No specimen at Kew.

8. **D. pleiostachya,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 255. Rootstock a globose tuber, with many slender root-fibres. Leaves 3–4, with a long sheathing base and a lanceolate glabrous coriaceous blade 8–12 in. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad, with close raised veins. Peduncle stiffly erect, terete, 2–3 ft. long, with several small reduced leaves. Racemes 1–3, dense, subspicate, 6–9 in. long, $\frac{1}{2}$ in. diam.; bracts setaceous from an ovate base, $\frac{1}{4}$–$\frac{1}{2}$ in. long. Perianth campanulate, $\frac{1}{4}$ in. long; segments linear-oblong, white. Stamens as long as the perianth. Capsule $\frac{1}{4}$ in. diam.

Lower Guinea. Angola: Pungo Andongo; on the banks of the River Cuanza, *Welwitsch*, 3785!

9. **D. falcata,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 256. Rootstock tuberous, horizontal; root-fibres slender. Leaves 6–8, lanceolate, falcate, thin, glabrous, 6–9 in. long, $\frac{3}{4}$–1 in. broad at the middle. Peduncle $1\frac{1}{2}$–2 ft. long, tinged with red, bearing many reduced leaves. Raceme simple, subspicate, dense, 3–4 in. long in the flowering stage; pedicels very short; bracts setaceous. Perianth white, $\frac{1}{4}$ in. long; segments oblong. Stamens as long as the perianth; anthers linear, $\frac{1}{8}$ in. long, as long as the filaments.—*Chlorophytum falcatum*, Engl. Hochgebirgsfl. Trop. Afr. 161.

Lower Guinea. Angola: Huilla; Morro de Lopollo, in rocky places, *Welwitsch*, 3793!

10. **D. aurea,** *Baker.* Leaves 5–6 to a stem, erect, linear, moderately firm, glabrous, 2–$2\frac{1}{2}$ ft. long, an inch broad at the middle,

narrowed gradually to the acuminate apex and sheathing base, obscurely ciliated on the edge. Peduncle stiffly erect, 3 ft. long, bearing a few reduced leaves, pubescent upwards. Raceme subspicate, cylindrical, ½–1 ft. long; bracts lanceolate, the lower large. Flowers clothed in the early stage with golden pubescence. Perianth ¼ in. long; segments oblong, white, with a red-brown keel. Stamens as long as the perianth; anthers longer than the filaments. Style much exserted.—*Chlorophytum* (*Dasystachys*) *aureum*, Engl. Jahrb. xv. 469.

Nile Land. British East Africa: Jur; Kurshook Ali's Seriba, *Schweinfurth*, 1504! Niamniam, *Schweinfurth*, 3570! 3752!

11. **D. campanulata,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 256, *t.* 35, *figs.* 1–4. Rootstock oblique, tuberous; root-fibres many, slender. Root-leaves 5–6, with a long sheathing base and a moderately firm glabrous lanceolate blade, 1–1½ ft. long, an inch broad at the middle. Peduncle stiffly erect, terete, 3–4 ft. long, bearing several adpressed reduced leaves. Raceme simple, dense, subspicate, cylindrical, 3–6 in. long; bracts setaceous from a lanceolate base, the lower ⅓–½ in. long. Perianth ⅓ in. long; segments lanceolate, white, with a 1-nerved brown keel. Stamens as long as the perianth; anthers shorter than the filaments. Capsule ¼ in. long.—*Chlorophytum campanulatum*, Engl. Hochgebirgsfl. Trop. Afr. 161.

Lower Guinea. Angola; Huilla; between Lopollo and Lake Ivantalla, *Welwitsch*, 3783!

12. **D. debilis,** *Baker.* Produced leaves 4, thin, erect, linear, glabrous, ½–1 ft. long, ¼–½ in. broad low down, tapering gradually to a long point. Peduncle very slender, leafless, subterete, much shorter than the leaves, pubescent upwards. Raceme dense, subspicate, 1–1½ in. long; bracts small, linear. Perianth campanulate, ⅙ in. long; segments oblong-lanceolate, white, the 1-nerved keel greenish towards the tip. Stamens much exserted; anthers linear, ⅛ in. long.

Mozamb. Dist. German East Africa: Kilimanjaro, 5000 ft., *Johnston!*

13. **D. Grantii,** *Benth. Gen. Plant.* iii. 789. Root-fibres many, cylindrical; neck crowned with copious bristles. Produced leaves 3, erect, lanceolate, moderately firm, glabrous on the surface, ciliated on the margin, a foot long, ¾ in. broad at the middle, narrowed gradually to the apex and the sheathing base. Peduncle glabrous, leafless, ½ ft. long. Raceme dense, subspicate, 3–4 in. long; bracts red, large, setaceous. Perianth campanulate, ⅙ in. long; segments oblong, whitish, with a brown keel. Stamens exserted; anthers linear-oblong, much shorter than the filaments. Style much exserted.—*Cæsia africana*, Baker in Trans. Linn. Soc. xxix. 160, t. 103 A.

Mozamb. Dist. German East Africa: Unyamwezi; Rubugwa, in boggy ground, 4000 ft., *Speke & Grant!*

Var. β *Engleri*, Baker. Leaves 2 ft. or more long. Peduncle longer than the leaves, bearing several reduced leaves.—*Chlorophytum africanum*, Engl. Jahrb. xv. 470, excl. syn.

Mozamb. Dist. German East Africa: Unyamwezi; Gonda, *Böhm*, 18, 162.

14. **D. colubrina,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 256; *t.* 35, *figs.* 5–10. Rootstock tuberous, oblique; old leaves splitting into copious fibres. Rudimentary leaves lanceolate, with copious red-brown spots. Produced leaves 5–6, linear, glabrous, subcoriaceous, a foot long, $\frac{1}{4}$ in. broad at the middle, narrowed gradually to the base and apex. Peduncle a foot long, terete, bearing 2–3 reduced leaves. Raceme simple, subspicate, oblong, $1\frac{1}{2}$–2 in. long; bracts purple, setaceous from a broad base, the lower $\frac{1}{4}$–$\frac{1}{3}$ in. long. Perianth $\frac{1}{4}$ in. long; segments white, with a 1-nerved red-brown keel. Stamens exserted; anthers much shorter than the filaments. Capsule $\frac{1}{4}$ in. diam.—*Chlorophytum colubrinum,* Engl. Hochgebirgsfl. Trop. Afr. 162.

Lower Guinea. Angola: Huilla; in rocky pastures, 5000–6000 ft., *Welwitsch,* 3784!

15. **D. papillosa,** *Baker.* Rootstock woody, irregular in shape; root-fibres slender; crown scarcely at all setose. Central leaves linear, a foot or more long, $\frac{1}{2}$ in. broad, glabrous on the surface, ciliated on the margin. Peduncle subterete, $1\frac{1}{2}$ ft. long, bearing several small reduced leaves. Raceme 2–3 in. long; pedicels very short; bracts subulate from a dilated scariose base. Perianth $3\frac{1}{2}$ lin. long, brownish, densely papillose outside; segments linear-oblong. Stamens much exserted; anthers linear-oblong, $\frac{1}{8}$ in. long.—*Chlorophytum* (*Dasystachys*) *papillosum,* Rendle in Journ. Linn. Soc. xxx. 422.

Mozamb. Dist. German East Africa: between the coast and Uyui, *Taylor.* No specimen at Kew.

16. **TULBAGHIA,** Linn.; Benth. et Hook. f. Gen. Plant. iii. 798.

Perianth gamophyllous; tube oblong; segments lanceolate, subequal, spreading, as long as or shorter than the tube. Corona inserted at the throat of the perianth-tube, cup-shaped or consisting of 3 distinct entire or bifid processes. Stamens 6, inserted in two rows in the tube of the perianth; filaments very short; anthers oblong. Ovary sessile, 3-celled; ovules many, superposed; style cylindrical; stigma capitate. Capsule loculicidally 3-valved. Seeds compressed; testa lax, black; albumen fleshy; embryo cylindrical.—Rootstock slightly tuberous; root-fibres many, slender. Leaves all radical, linear, often smelling of garlic. Peduncle long, slender. Flowers small, umbellate.

Species about 12, all the others are natives of South Africa.

Corona very narrow, deeply lobed	1. *T. æquinoctialis.*
Corona cup-shaped, subentire.	
Perianth-segments as long as the tube . . .	2. *T. Cameroni.*
Perianth-segments $\frac{2}{3}$ the length of the tube . .	3. *T. Bragæ.*
Perianth-segments $\frac{1}{2}$ the length of the tube . .	4. *T. alliacea.*

1. **T. æquinoctialis,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 246. Corm ovoid, $\frac{1}{2}$–$\frac{3}{4}$ in. diameter; outer tunics brown, membranous. Leaves 3–5, narrowly linear, 4–6 in. long. Peduncle longer

than the leaves. Umbel 3-flowered; spathe-valves lanceolate, $\frac{1}{4}$–$\frac{1}{3}$ in. long; pedicels as long as the spathe-valves. Perianth white, 5 lin. long; segments lanceolate, as long as the oblong tube. Corona very short, yellow, deeply lobed.

Lower Guinea. Angola: Pungo Andongo, *Welwitsch*, 2754!

2. **T. Cameroni,** *Baker in Journ. Bot.* 1878, 321. Rootstock and leaves not seen. Peduncle very slender, 5–6 in. long Flowers 3–4 in an umbel; spathe-valves lanceolate, 1 in. long; pedicels shorter than the spathe-valves. Perianth-tube oblong, $\frac{1}{4}$ in. long; segments lanceolate, as long as the tube. Corona campanulate, $\frac{1}{8}$ in. long, obscurely and irregularly lobed. Anthers not exserted from the corona.

Mozamb. Dist. Lake Tanganyika, *Cameron!* British Central Africa: North Nyasaland and Upper Loangwa River, at Fort Young, *Nicholson!*

3. **T. Bragæ,** *Engl. Pfl. Ost. Afr. C.* 141. Rootstock thick. Leaves narrowly linear, $\frac{1}{3}$ the length of the peduncle. Spathe-valves lanceolate, acuminate, as long as the pedicels, which are longer than the flowers. Perianth-segments rose-red, linear, $\frac{2}{3}$ the length of the tube. Corona lanceolate, subtruncate, orange-yellow, $\frac{1}{2}$ as long as the perianth-segments. Anthers exserted from the corona.

Mozamb. Dist. Portuguese East Africa: Beira, *Braga*.

No specimen at Kew.

4. **T. alliacea,** *Thunb. Prodr.* 60. Corm ovoid, $\frac{1}{2}$–$\frac{3}{4}$ in. diam.; outer tunics brown, membranous. Leaves narrowly linear, erect, $\frac{1}{2}$ ft. long. Peduncle slender, fragile, $\frac{1}{2}$–$1\frac{1}{2}$ ft. long. Flowers 3–6 in an umbel; spathe-valves lanceolate or ovate, $\frac{1}{3}$–$\frac{1}{2}$ in. long; pedicels $\frac{1}{4}$–1 in. long. Perianth-tube oblong, greenish, $\frac{1}{4}$ in. long; segments lanceolate, $\frac{1}{2}$ as long as the tube. Corona cup-shaped, brownish, entire, $\frac{1}{2}$ as long as the perianth-segments. Anthers not exserted from the corona.—Baker in Journ. Linn. Soc. xi. 371, and in Fl. Cap. vi. 405.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, *Scott-Elliot!* and without precise locality, *Buchanan*, 1334!

Also in South Africa.

17. ALLIUM, Linn.; Benth et Hook. f. Gen. Plant. iii. 802.

Perianth polyphyllous; segments 6, subequal, oblong or lanceolate, spreading or permanently connivent. Stamens 6, attached to the base of the perianth-segments; filaments subulate or flattened, or tricuspidate; anthers oblong. Ovary globose, sessile or shortly stipitate, perfectly or imperfectly 3-celled; ovules usually 2 in a cell; style subulate; stigma minute. Capsule loculicidally 3-valved. Seeds triquetrous; testa black, membranous; albumen fleshy; embryo cylindrical.—Whole plant smelling of garlic. Rootstock bulbous or subrhizomatous. Leaves all radical, but often clasping the base of the stem for some distance. Flowers small, white or coloured, usually numerous, umbellate.

Species 250–300. Concentrated in the north temperate zone, one in South Africa.

Filaments of inner stamens tricuspidate . . .	1. *A. alibile.*
Filaments uniform, subulate.	
Bulbs solitary, globose	2. *A. spathaceum.*
Bulbs cæspitose, narrowly ovoid	3. *A. angolense.*

1. **A.** (**Porrum**) **alibile,** *A. Rich. Tent. Fl. Abyss.* ii. 330. Bulb globose, white, the thickness of a man's finger. Leaves unknown. Peduncle 1½ ft. long. Umbel dense, many-flowered; pedicels short; spathe short, scariose, many-valved, and pedicels also subtended by short scales. Perianth campanulate, pale rose; segments erect, ovate-oblong, acute. Filaments of the inner stamens tricuspidate; of the outer lanceolate.—Regel, Monogr. All. 69; Engl. Hochgebirgsfl. Trop. Afr. 165.

Nile Land. Abyssinia: Shire; on mountains, near Tembella, *Quartin-Dillon.*
No specimen at Kew.

2. **A.** (**Molium**) **spathaceum,** *Steud. ex A. Rich. Tent. Fl. Abyss.* ii. 330. Bulb globose, ½–¾ in. diam.; outer tunics pale, scariose. Leaves 1–2, thin, narrowly linear, glabrous, sometimes as long as the peduncle. Peduncle slender, fragile, 4–9 in. long. Umbel 10–15-flowered; spathe of 1 short ovate valve; pedicels ½–¾ in. long. Perianth ⅙ in. long; segments oblong, subacute, spreading, white, with a distinct brown keel. Stamens nearly as long as the perianth; filaments subulate. Style as long as the ovary.—*A. subhirsutum var. spathaceum,* Regel, Monogr. All. 221; Engl. Hochgebirgsfl. Trop. Afr. 164; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 75.

Nile Land. Eritrea: Mount Alamkale, near Aideresso, 5900 ft., *Schweinfurth & Riva,* 1475! Abyssinia: Samen; near Demerki, on Mount Bachit, 10,000–11,000 ft., *Schimper,* 1266! Ghaba, *Steudner,* 451; Nori, *Schimper,* 57; and without precise locality, *Schimper,* 839!

3. **A.** (**Rhiziridium**) **angolense,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 262. Bulbs densely cæspitose, narrowly ovoid, 3 in. long; outer tunics brown, membranous. Leaves 6–8, narrowly linear, erect, glaucous, 6–9 in. long. Peduncle stout, 1 ft. or more long, narrowed gradually from the middle to the apex. Umbel dense, globose, 2 in. diam.; pedicels 6–9 lin. long; spathe-valve 1, short, broad, membranous. Perianth campanulate, ⅙ in. long; segments oblong, white, with a brown keel, permanently ascending. Stamens as long as the perianth; filaments subulate; anthers small, oblong. Style as long as the ovary.

Lower Guinea. Angola: Golungo Alto, in pastures, *Welwitsch,* 3764!

18. **DIPCADI,** Medic.; Benth. et Hook. f. Gen. Plant. iii. 809.

Perianth gamophyllous; tube oblong; segments dissimilar, 3 inner shorter, connivent, truncate; three outer more or less distinctly caudate. Stamens 6, inserted at the throat of the perianth; filaments short; anthers oblong or linear. Ovary sessile, globose, 3-celled; ovules many,

superposed; style subulate; stigma capitate. Capsule loculicidally 3-valved. Seeds compressed; testa black, membranous; albumen fleshy; embryo cylindrical.—Rootstock a tunicated bulb. Leaves all radical, usually linear. Inflorescence a lax raceme. Flowers usually small, greenish.

Species 40. Also many in South Africa, a few in South Europe, India, and Madagascar.

Outer perianth-segments scarcely longer than the inner.
Leaves terete.
Bracts linear . . . . . 1. *D. zambesiacum.*
Bracts ovate, cuspidate . . . . . 2. *D. durandianum.*
Leaves linear or lanceolate.
Leaf solitary.
Leaf linear . . . . . 3. *D. unifolium.*
Leaf lanceolate . . . . . 4. *D. platyphyllum.*
Leaves two or more, linear.
Perianth $\frac{1}{2}$ in. long.
Perianth yellowish-white . . . . 5. *D. venenatum.*
Perianth green.
Bracts lanceolate, acuminate . . . 6. *D. longifolium.*
Bracts ovate, acuminate.
Peduncle short . . . . . 7. *D. fesoghlense.*
Peduncle long . . . . . 8. *D. sansibaricum.*
Perianth $\frac{2}{3}$ in. long . . . . . 9. *D. firmifolium.*
Outer segments distinctly longer than the inner.
Tail of the outer segments short.
Leaves subterete.
Leaves 2–3 to a stem.
Peduncle very short . . . . . 10. *D. minimum.*
Peduncle 6–8 in. long . . . . . 11. *D. Welwitschii.*
Peduncle 1 ft. or more long . . . . 12. *D. filifolium.*
Leaves 6–8 to a stem . . . . . 13. *D. arenarium.*
Leaves linear.
Flowers green.
Peduncle under 1 ft. long.
Bracts lanceolate, acuminate . . . 14. *D. tacazzeanum.*
Bracts ovate.
Bulb $\frac{1}{2}$–$\frac{3}{4}$ in. diam. . . . . 15. *D. oxylobum.*
Bulb 1–2 in. diam. . . . . 16. *D. occidentale.*
Peduncle 3–4 ft. long . . . . . 17. *D. comosum.*
Flowers brick-red . . . . . 18. *D. lateritium.*
Leaves lanceolate.
Leaves 3–4 in. long . . . . . 19. *D. lanceolatum.*
Leaves 1–1$\frac{1}{2}$ ft. long . . . . . 20. *D. magnum.*
Leaves lorate.
Pedicels very short . . . . . 21. *D. clarkeanum.*
Lower pedicels $\frac{1}{2}$–$\frac{3}{4}$ in. long . . . . 22. *D. longibracteatum.*
Tail of outer segments long.
Leaf 1 with a long sheathing base.
Flowers green . . . . . 23. *D. vaginatum.*
Flowers reddish black . . . . . 24. *D. thollonianum.*
Leaves 2 or more, not sheathing the peduncle . 25. *D. viride.*

1. **D. zambesiacum,** *Baker.* Bulb globose, $\frac{1}{2}$ in. diam.; tunics dull brown. Leaves 4, erect, subterete, glabrous, channelled down the

face, 6–8 in. long, 1 lin. diam. low down. Peduncle slender, as long as the leaves. Raceme very lax, $\frac{1}{2}$ ft. long; pedicels short, ascending; bracts linear, the lower $\frac{1}{3}$–$\frac{1}{2}$ in. long. Perianth green; tube oblong, $\frac{1}{4}$ in. long; inner segments as long as the tube; outer slightly longer, falcate, flat, not caudate. Anthers linear, $\frac{1}{8}$ in. long; filaments very short. Capsule quadrate, $\frac{1}{4}$ in. diam.

Mozamb. Dist. Portuguese East Africa: Zambesi Delta, between Mambucha and Vicenti, *Scott!*

2. **D. durandianum,** *Schinz in Dur. & Schinz, Conspect. Fl. Afr.* v. 374. Bulb globose, $\frac{1}{2}$–$\frac{3}{4}$ in. diam.; outer tunics white. Leaves many to a bulb, filiform, very slender, erect, 3–10 in. long. Peduncle slender, $1\frac{1}{2}$–2 ft. long. Raceme very lax, secund, 6–8-flowered; pedicels arcuate, ascending, $\frac{1}{8}$–$\frac{1}{3}$ in. long; bracts large, ovate, cuspidate, deciduous. Perianth green; tube oblong-cylindrical, $\frac{1}{3}$ in. long; inner segments linear, as long as the tube; outer scarcely longer, linear-complicate, falcate or spreading. Anthers oblong, subsessile at the throat of the perianth-tube. Capsule oblong, subsessile, obtusely angled, $\frac{1}{3}$ in. long. *D. bakerianum*, Schinz in Verh. Bot. Ver. Prov. Branden. xxxi. 217, not of Bolus.

Lower Guinea. German South-west Africa: Amboland; near Olukonda *Schinz*, 7! 410! *Rautanen*, 103.

3. **D. unifolium,** *Baker in Journ. Linn. Soc.* xi. 399. Bulb globose, $\frac{1}{3}$–$\frac{1}{2}$ in. diam.; outer tunics dull brown. Leaf single, linear, erect, glabrous, 6–7 in. long, clasping the base of peduncle for some distance. Peduncle slender, rather shorter than the leaf. Raceme laxly 3–6-flowered; pedicels very short; bracts very small, lanceolate. Perianth green; tube oblong, $\frac{1}{6}$ in. long; inner segments flat, as long as the tube; outer complicate, rather longer than the inner. Anthers subsessile. Ovary sessile.—*Uropetalum tacazzeanum var. angustifolium*, Schweinf. ex Baker in Journ. Linn. Soc. xi. 399.

Nile Land. Galabat: left bank of the River Gendua, *Schweinfurth*, 23!

4. **D. platyphyllum,** *Baker.* Stem slender, glabrous, 6–9 in. long, bearing from above the base a single sheathing lanceolate leaf, 6–9 in. long, 1 in. broad, glabrous on the surface, much crisped towards the margin and ciliate with long white hairs. Raceme lax, 3–4 in. long in the flowering stage; rhachis slender, pubescent; pedicels cernuous, pubescent, $\frac{1}{8}$–$\frac{1}{4}$ in. long; bracts minute, ovate. Perianth green; tube oblong, $\frac{1}{6}$ in. long; inner segments oblong, as long as the tube; outer segments caudate, a little longer than the inner, not spreading. Anthers sessile at the throat of the perianth-tube. Capsule oblong-quadrate, sessile.

Mozamb. Dist. British Central Africa: Ngamiland; Kwebe, *Lugard*, 44!

5. **D. venenatum,** *Schinz in Bull. Herb. Boiss.* iv. *App.* iii. 42. Bulb ovoid, $1\frac{1}{2}$ in. diam. Leaves linear, channelled, glabrous, fleshy, 8 in. long, $\frac{1}{12}$–$\frac{1}{6}$ in. broad. Raceme lax, many-flowered; pedicels $\frac{1}{8}$–$\frac{1}{4}$

in. long; bracts caudate, $\frac{1}{3}$ in. long. Perianth yellowish-white, $\frac{1}{2}$ in. long. Anthers subsessile at the throat of the perianth-tube.

Lower Guinea. German South-west Africa: Amboland; near Olukonda, *Rautanen,* 126.

No specimen at Kew.

6. **D. longifolium,** *Baker in Journ. Linn. Soc.* xi. 397. Bulb globose, 1 in. diam.; outer tunics pale. Leaves 3–6, linear, glabrous, 1–2 ft. long. Peduncle long, slender, fragile. Raceme very lax, 4–8-flowered; pedicels very short; bracts lanceolate, acuminate, $\frac{1}{4}$–$\frac{1}{2}$ in. long. Perianth green, $\frac{1}{2}$ in. long; tube oblong; segments of both rows as long as the tube, the inner flat, the outer subcaudate. Anthers oblong, nearly sessile. Capsule sessile, subglobose, $\frac{1}{3}$ in. diam.—*Uropetalum longifolium,* Lindl. in Bot. Reg. t. 974; Kunth, Enum. iv. 378.

Upper Guinea. Niger Territory: Nupe; abundant on the plains of Ilorin, *Barter,* 3441!

Mozamb. Dist. Portuguese East Africa: Lower Zambesi; opposite Sena, *Kirk!* Shupanga, *Kirk!* Mozambique, *Forbes!* British Central Africa: Nyasaland; valley of the River Shire, *Meller!*

7. **D. fesoghlense,** *Baker.* Bulb unknown. Leaves 2, narrowly linear, 6–8 in. long, $\frac{1}{12}$ in. broad. Peduncle 4 in. long. Raceme laxly many-flowered; pedicels very short; bracts ovate, acuminate, the lower $\frac{1}{4}$–$\frac{1}{3}$ in. long. Perianth green, $\frac{1}{2}$ in. long; inner segments as long as the tube; outer scarcely longer, with a tail $\frac{1}{12}$ in. long. Style shorter than the ovary.—*Uropetalum fesoghlense,* Solms in Schweinf. Beitr. Fl. Æthiop. 204.

Nile Land. Upper Sennar: Fazokl, *Cienkowsky.*

No specimen at Kew.

8. **D. sansibaricum,** *Engl. Pfl. Ost-Afr. C.* 142. Bulb globose. Leaves narrowly linear, half as long as the scape. Raceme laxly 8–9-flowered; pedicels short; bracts ovate, acuminate. Perianth green, $\frac{1}{2}$ in. long; segments linear, subobtuse. Capsule large for the genus, $\frac{1}{2}$ in. diam.

Mozamb. Dist. Zanzibar: at Kumbeni, on coral line limestone, *Stuhlmann.*

No specimen at Kew.

9. **D. firmifolium,** *Baker.* Leaves narrowly linear, firm, erect, glabrous, thick, deeply grooved, 1 ft. long, $\frac{1}{8}$ in. broad. Peduncle 6–8 in. long, without any sheathing leaf. Raceme lax, many-flowered, 3–4 in. long; pedicels ascending, lower $\frac{1}{4}$–$\frac{1}{2}$ in. long; bracts green, persistent, lanceolate, acuminate, lower above 1 in. long. Perianth-tube oblong-cylindrical, $\frac{1}{3}$ in. long; inner segments oblong, nearly as long as the tube, green with a tinge of yellow; outer caudate, spreading, slightly longer than the outer. Stamens half as long as the inner segments; filaments very short. Ovary shortly stipitate.

Mozamb. Dist. British Central Africa: Ngamiland; Kwebe, *Lugard,* 57!

10. **D. minimum,** *Webb, Phyt. Canar.* iii. 341. Bulb ovoid, $\frac{1}{3}$–$\frac{1}{2}$ in. diam.; outer tunics brown. Leaves 2–3, slender filiform, erect, glabrous,

2–3 in. long. Peduncle 1½–2 in. long. Raceme short, secund, 2–4-flowered; pedicels very short; bracts lanceolate, lower ¼ in. long. Perianth green; tube oblong, ⅙ in. long; inner segments as long as the tube; outer rather longer, complicate, falcate. Anthers subsessile at the throat of the tube. Ovary sessile.—Baker in Journ. Linn. Soc. xi. 399; Engl. Hochgebirgsfl. Trop. Afr. 166. *Uropetalum minimum*, Steud. ex A. Rich. Tent. Fl. Abyss. ii. 326.

Nile Land. Abyssinia: Samen; in dry mountain meadows, near Enjedcap, *Schimper*, 1168!

11. **D. Welwitschii,** *Baker in Journ. Linn. Soc.* xi. 400. Bulb globose, 1 in. diam.; outer tunics pale. Leaves 2, narrowly linear, complicate, glabrous, much shorter than the peduncle. Peduncle slender, stiffly erect, 6–8 in. long. Raceme lax, 6–8-flowered; pedicels ascending, ⅛–¼ in. long; bracts ovate or lanceolate, small. Perianth green; tube ¼ in. long; inner segments linear, as long as the tube; outer complicate, ⅛ in. longer than the inner. Anthers oblong, as long as the filaments. Capsule sessile, globose, ¼ in. long.—Baker in Trans. Linn. Soc. ser. 2, Bot. i. 246; Engl. Hochgebirgsfl. Trop. Afr. 167. *Uropetalum Welwitschii*, Baker in Saund. Ref. Bot. t. 16.

Lower Guinea. Angola: Huilla; subtemperate region, 3800–5500 ft., *Welwitsch*, 3715!

12. **D. filifolium,** *Baker in Journ. Bot.* 1878, 322. Bulb globose, ½–¾ in. diam.; tunics dull brown. Leaves 2, subterete, firm, slender, glabrous, nearly 1 ft. long. Peduncle slender, 1 ft. or more long. Raceme very lax, 3–10-flowered; pedicels short, erecto-patent; bracts obsolete or deciduous. Perianth fulvous-green; tube oblong, ⅙ in. long; inner segments linear, as long as the tube; outer complicate, ⅛–⅙ in. longer than the inner. Anthers oblong, nearly sessile at the throat of the perianth-tube. Capsule ⅓ in. diam., shortly stipitate.

Nile Land. British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 1947!

13. **D. arenarium,** *Baker.* Bulb not seen. Leaves 7–8 to a cluster, terete, very slender, moderately firm, glabrous, 5–6 in. long. Peduncle slender, about as long as the leaves. Raceme lax, few-flowered; pedicels ⅙ in. long; bracts lanceolate, acuminate, the lower twice as long as the pedicels. Perianth green; tube oblong-cylindrical, ¼ in. long; inner segments very slender; outer subulate, ¼ in. longer than the inner. Anthers subsessile.

Nile Land. British East Africa: Kikumbuliyu: at Kenani, in dry sandy soil, *Scott-Elliot*, 6246!

14. **D. tacazzeanum,** *Baker in Journ. Linn. Soc.* xi. 400. Bulb globose, 1 in. diam.; tunics pale. Leaves 2–3, linear, flat, glabrous, 3–4 in. long. Peduncle slender, 6–9 in. long. Raceme laxly 6–12-flowered; pedicels very short; bracts lanceolate, acuminate, ¼ in. long. Perianth green; tube oblong-cylindrical, ¼ in. long; inner segments truncate, as long as the tube; outer $\frac{1}{12}$ in. longer, subulate, falcate.

Anthers sessile at the throat of the perianth-tube. Capsule subglobose, sessile.—Martelli, Fl. Bogos. 85; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 76. *Uropetalum tacazzeanum*, Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 325.

Nile Land. Eritrea: Bogos, *Beccari*, 111! near Saati, 480–970 ft., *Schweinfurth & Riva*, 50, 52; and at Ginda, 3000 ft., *Schweinfurth & Riva*, 189. Abyssinia: at the foot of the mountains in the valley of the River Tacazze, *Schimper*, 1696! British East Africa: Jur; Abu Guroon's Seriba, *Schweinfurth*, 1559!

U. (?) *depressum*, A. Rich. loc. cit., of which the flowers are unknown, a native of Abyssinia, is said to differ from *tacazzeanum* by having 4–5 longer, broader leaves, and a more acutely-angled capsule.

15. **D. oxylobum,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 246. Bulb subglobose, $\frac{1}{2}$–$\frac{3}{4}$ in. diam.; outer tunics pale. Leaves 2, narrowly linear, complicate, glabrous, 4–6 in. long. Peduncle slender, 6–9 in. long. Raceme lax, subsecund, 5–10-flowered; pedicels short; bracts ovate, cuspidate, lower $\frac{1}{4}$–$\frac{1}{3}$ in. long. Perianth green tinged with cinnamon-red; tube oblong, $\frac{1}{6}$ in. long; inner segments flat, rather longer than the tube; outer complicate, falcate, $\frac{1}{8}$–$\frac{1}{6}$ in. longer than the inner. Anthers nearly sessile at the throat of the perianth-tube.

Lower Guinea. Angola: Pungo Andongo; subtemperate region, 2400–3800 ft., *Welwitsch*, 3714! 3716!

16. **D. occidentale,** *Baker in Kew Bulletin*, 1895, 119. Bulb globose, 1–2 in. diam.; outer tunics whitish. Leaves 2–3 to a bulb, linear, glabrous, $\frac{1}{2}$–1 ft. long. Peduncle slender, 5–6 in. long. Raceme very lax, 3–6-flowered; pedicels very short, erecto-patent; bracts ovate, as long as the pedicels. Perianth green; tube oblong, $\frac{1}{6}$ in. long; inner segments linear-oblong, nearly as long as the tube; outer linear, complicate, $\frac{1}{8}$ in. longer than the inner. Anthers linear-oblong, $\frac{1}{12}$ in. long, exceeding the filaments.

Upper Guinea. Sierra Leone: by the Scarcies River, near Wallia; on hard dry laterite, *Scott-Elliot*, 4840! Interior of Western Lagos, *Rowland!*

17. **D. comosum,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 247, *t.* 34, *figs.* 1–3. Bulb large, depresso-globose, bulbilliferous at the base; outer tunics light red. Leaves linear, glabrous, channelled down the face, 2 ft. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad low down. Peduncle 3–4 ft. long. Raceme lax, 30–60-flowered, $1\frac{1}{2}$–2 ft. long; lower flowers perfect, many upper imperfect; lower pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long; bracts lanceolate. Perianth green, 8–9 lin. long; tube oblong; inner segments as long as the tube; outer rather longer, falcate, distinctly caudate. Perianth of upper imperfect flowers reduced to 3 long entirely filiform segments.—Engl. Hochebirgsfl. Trop. Afr. 167.

Lower Guinea. Angola: Huilla; near Lopollo, on sandy hills in the subtemperate region, 3800–5500 ft., *Welwitsch*, 3732! and without precise locality, *Antunes!*

18. **D. lateritium,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 247. Bulb globose, $\frac{3}{4}$–1 in. diam.; tunics whitish. Leaves 2–4,

linear, glabrous, 1–1½ ft. long, ⅓–½ in. broad. Peduncle slender, as long as the leaves. Raceme lax, secund, 2–6 in. long; pedicels ascending, the lower 6–9 lin long; bracts lanceolate, ¼–½ in. long. Perianth brick-red colour; tube oblong; inner segments linear, ⅓ in. long, outer caudate, ½ in. long. Anthers subsessile at the throat of the perianth-tube. Capsule sessile.—Engl. Hochgebirgsfl. Trop. Afr. 167.

Lower Guinea. Angola: Huilla; subtemperate region, 3800–5500 ft., *Welwitsch*, 3716! 3717!

19. **D. lanceolatum,** *Baker in Journ. Bot.* 1878, 322. Bulb not seen. Leaves 4–5, lanceolate, acute, glabrous, 3–4 in. long, ¼–⅓ in. broad. Peduncle moderately stout, 8–18 in. long. Raceme very lax, ½–1 ft. long; pedicels very short, erecto-patent; bracts linear, the lower ⅓–½ in. long. Perianth green; tube oblong, ⅙–⅕ in. long; inner segments flat, rather longer than the tube; outer complicate, ⅛–⅙ in. longer than the inner. Stamens reaching half-way up the inner segments. Ovary oblong, sessile.

Nile Land. Bongo: Gir, *Schweinfurth*, 1782!

20. **D. magnum,** *Baker*. Leaves thin, lanceolate, 1–1½ ft. long, 2 in. broad at the middle, glabrous on the margin. Peduncle stiffly erect, 1½ ft. long. Raceme lax, 1–1½ ft. long; pedicels spreading or ascending, lower 1½–2 in. long; bracts minute, linear, deciduous. Perianth-tube ⅓ in. long; segments oblong, nearly as long as the tube, yellow with a broad green keel; outer caudate, green, spreading, ⅓–½ in. long. Stamens nearly as long as the inner segments; anthers as long as the flattened filaments. Ovary quadrate, sessile.

Mozamb. Dist. British Central Africa: Ngamiland; Kwebe, *Lugard*, 88!

21. **D. clarkeanum,** *Schinz in Verh. Bot. Ver. Prov. Branden.* xxxi. 218. Bulb large, globose; outer tunics white. Leaves 3, lorate, obtuse, glabrous, ½–1 ft. long, above an inch broad. Peduncle stout, stiffly erect, 1½ ft. long. Raceme long, very lax; pedicels very short; bracts minute or deciduous. Perianth green; tube oblong, ⅙ in. long; inner segments linear, twice as long as the tube; outer linear complicate, falcate, ⅛–⅙ in. longer than the inner. Anthers sessile at the throat of the tube. Capsule quadrate, ¾ in. long, ⅝ in. diam.

Lower Guinea. German South-west Africa: Hereroland; Zwartbank Berg, *Stapff*.

Also in South Africa.

22. **D. longibracteatum,** *Schinz in Verh. Bot. Ver. Prov. Branden.* xxxi. 218. Bulb globose, 2 in. diam.; outer tunics pale. Leaves 5, lorate, glabrous, 1 ft. long, 1–1½ in. broad at the middle, narrowed gradually to a clasping base. Peduncle robust, 1½ ft. long. Raceme dense, 4 in. long; lower pedicels deflexed, ½–¾ in. long; bracts lanceolate, white, scariose, protruding beyond the buds. Perianth green; tube oblong, ¼ in. long; inner segments flat, as long as the tube; outer

complicate, $\frac{1}{6}$ in. longer than the inner. Anthers subsessile at the throat of the perianth-tube.

Lower Guinea. German South-west Africa: Amboland; between Olukonda and Unkuambi, *Schinz*, 36! 411!

23. **D. vaginatum,** *Baker.* Stem slender, flexuose, 1 ft. or more long, with a single flat linear glabrous leaf 6–8 in. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad, with a long sheath arising from the stem above the base. Raceme very lax, 4–5 in. long; lower pedicels $\frac{1}{2}$–$\frac{3}{4}$ in. long; bracts small, linear. Perianth green; tube oblong-cylindrical, $\frac{1}{3}$ in. long; inner segments ovate-oblong, nearly as long as the tube; outer caudate, spreading, $\frac{3}{4}$ in. long. Stamens half as long as the inner segments; anther larger than the filament. Capsule sessile, $\frac{3}{4}$ in. diam.

Mozamb. Dist. British Central Africa: Ngamiland; Kwebe, *Lugard*, 47!

24. **D. thollonianum,** *Hua, Contr. Fl. Congo Franç. Lil.* 23. Bulb not seen. Leaf linear, moderately firm, glabrous, a foot long, $\frac{1}{4}$ in. broad. Peduncle with raceme nearly 3 ft. long. Raceme lax, 1 ft. long, 10-flowered; bracts ovate-caudate, scariose, the lower $\frac{1}{3}$ in. long; pedicels erect, as long as the bract, articulated at the apex. Perianth nearly an inch long; outer segments reddish-black, with a papillose tail $\frac{1}{2}$ in. long; inner paler, $\frac{1}{4}$ in. long; both 5-nerved. Filaments very short. Ovary oblong; ovules about 20 in a cell; style included.

Lower Guinea. Lower Congo: prairies by the River Jue, near Brazzaville, *Thollon*, 4076!

No specimen at Kew.

25. **D. viride,** *Moench, Method. Suppl.* 267. Bulb ovoid, 1 in. diam.; outer tunics pale. Leaves 2 or more, erect, linear, glabrous, sometimes 1 ft. long. Peduncle slender, fragile, 1 ft. or more long. Raceme very lax; lower pedicels $\frac{1}{4}$ in long; bracts small, linear. Perianth green; tube oblong, $\frac{1}{4}$ in. long; inner segments as long as the tube; outer filiform very slender, $\frac{3}{4}$–1 in. long. Filaments very short: anthers oblong. Capsule sessile, $\frac{1}{2}$ in. diam.—Baker in Journ. Linn. Soc. xi. 401, and in Fl. Cap. vi. 449. *Hyacinthus viridis*, Linn. Sp. Plant. ed. ii. 454; Jacq. Ic. t. 66.

Nile Land. Somaliland, *Miss Edith Cole!*

Also collected in the mountains south of the Equator by Bishop Hannington.

Also in South Africa.

19. **PSEUDOGALTONIA,** Kuntze in Jahrb. Königl. Bot. Gart. Berl. iv. (1886), 274.

Perianth-tube funnel-shaped, curved; segments 6, oblong, subequal, ascending. Stamens 6, inserted at the throat of the perianth-tube, shorter than the segments; filaments flattened; anthers linear-oblong, dorsi-fixed, dehiscing longitudinally. Ovary sessile, oblong,

3-celled; ovules many in a cell, superposed; style subulate; stigma minute, capitate. Fruit and seeds unknown.—*Lindneria*, Dur. et Lubb.

Monotypic. Endemic.

1. **P. Pechuelii,** *Kuntze in Jahrb. Königl. Bot. Gart. Berlin*, iv. 274. Bulb globose, 6–10 in. diam., crowned with copious fibrous relics of old leaves. Leaves 6–8, sessile, lanceolate, subcoriaceous, suberect, glabrous, 1–1½ ft. long, 1½–2 in. broad low down. Peduncle terete, stiffly erect, longer than the leaves. Raceme dense, 100-flowered, 8–10 in. long; pedicels 1½–2 in. long, upper cernuous, lower ascending; bracts lanceolate, acuminate, half as long as the pedicels. Perianth greenish-white, 1¼–1½ in. long; segments half as long as the tube. Anthers nearly as long as the filaments. Style not exserted.—*Lindneria fibrillosa*, Dur. et Lubb. in Bull. Soc. Bot. France, xxxvi. ccxvii. t. 18; Baker in Gard. Chron. 1890, viii. 240.

Lower Guinea. German South-west Africa: Hereroland, *Pechuel-Loische.*

Imported alive from Damaraland in 1886 by Mr. Lindner, and flowered at the Brussels Botanic Garden in 1888.

No specimen at Kew.

20. **HYACINTHUS,** Linn.; Benth. et Hook. f. Gen. Plant. iii. 812.

Perianth gamophyllous; tube campanulate or oblong; segments subequal, spreading upwards. Stamens 6, inserted in the tube, shorter than the perianth; filaments filiform or flattened at the base; anthers versatile. Ovary sessile, ovoid, 3-celled; ovules few, superposed; style subulate; stigma small, capitate. Capsule loculicidally 3-valved, not deeply lobed. Seeds subglobose; testa black; albumen fleshy; embryo cylindrical.—Rootstock a tunicated bulb. Leaves contemporary with the flowers, generally sessile, linear or lorate. Inflorescence racemose; bracts scariose, persistent.

Species 30, mostly Mediterranean and Oriental, 1 Madagascar, 2 in South Africa.

1. **H. ledebourioides,** *Baker in Journ. Linn. Soc.* xi. 427. Bulb small, ovoid or subglobose, ½–1 in. diam.; outer tunics pale, membranous. Leaves 3–6, oblong or linear-oblong, glabrous, 1–1½ in. long, narrowed into a distinct petiole. Peduncle very slender, 2–3 in. long. Raceme dense or moderately dense, 1–2 in. long; pedicels short ascending, articulated at the apex; bracts minute, deltoid. Perianth cylindrical, ⅙ in. long; tube subcylindrical; segments linear-oblong, white, with a slender 1-nerved brown keel, twice as long as the tube. Anthers subsessile, biseriate, inserted above the middle of the perianth-tube. Capsule depresso-globose, emarginate, ⅛ in. diam. Seeds solitary.

Mozamb. Dist. Portuguese East Africa: Lower Zambesi; Sena, *Kirk!* Shupanga, in dry places on the tertiary hills, *Kirk!* British Central Africa: Nyasa-

land; Zomba and east end of Lake Shirwa, *Meller!* and between Blantyre and Matope, *Scott!*

Perhaps should be separated generically from *Hyacinthus*, from which it differs by its petiolate leaves and solitary seeds.

21. **DRIMIA**, Jacq.; Benth. et Hook. f. Gen. Plant. iii. 808.

Perianth gamophyllous; tube oblong or campanulate; segments equal, longer than the tube, spreading or reflexed, linear or oblong; Stamens 6, inserted at the throat of the perianth-tube; filaments nearly or quite as long as the segments, filiform or flattened towards the base; anthers oblong. Ovary sessile, ovoid, 3-celled; ovules many, superposed; style subulate; stigma minute. Capsule loculicidally 3-valved. Seeds flattened; testa black; albumen fleshy; embryo cylindrical.—Rootstock a tunicated bulb. Leaves often not contemporary with the flowers. Flowers many, laxly racemose, greenish or purple.

Species 30, the others in South Africa.

Bracts large linear.
- Bracts $\frac{1}{2}$ in. long . . . . . 1. *D. robusta.*
- Bracts $\frac{1}{4}$ in. long . . . . . 2. *D. zombensis.*

Bracts minute.

Perianth small; segments flat.
- Raceme short . . . . . 3. *D. Fischeri.*
- Raceme long . . . . . 4. *D. Barteri.*

Perianth $\frac{1}{3}$–$\frac{1}{2}$ in. long; segments channelled.

Leaves synanthous.

Leaves oblong.
- Peduncles shorter than the leaves . . . 5. *D. Coleæ.*
- Peduncle much longer than the leaves . . 6. *D. angustitepala.*

Leaves oblong-lanceolate.
- Peduncle as long as the leaves . . . 7. *D. Hildebrandtii.*
- Peduncle much longer than the leaves . . 8. *D. brevifolia.*

Leaves hysteranthous . . . . . 9. *D. laxiflora.*

1. **D. robusta,** *Baker in Saund. Ref. Bot. t.* 190? Bulb and leaves not seen. Peduncle very stout. Raceme dense, 8–12 in. long, 2–2$\frac{1}{2}$ in. diam. when expanded; central pedicels patent, $\frac{1}{2}$–$\frac{5}{8}$ in. long; bracts linear, scariose, as long as the pedicels, protruding beyond the buds. Perianth reddish-brown, $\frac{5}{8}$ in. long; tube oblong; segments linear, 3 times the length of the tube. Stamens nearly as long as the perianth-segments; filaments filiform; anthers minute. Style overtopping the anthers.

Mozamb. Dist. British Central Africa: Nyasaland: Mount Mlanje, 6000 ft., *Whyte! McClounie!*

May prove distinct from the Cape species when fully known.

2. **D. zombensis,** *Baker.* Bulb globose, $\frac{3}{4}$–1 in. diam.; tunics brown, membranous, produced above its neck. Leaves not contemporary with the flowers, linear, glabrous. Peduncle slender, stiffly

erect, 1½–2 ft. long. Raceme lax, cylindrical, 3–6 in. long; pedicels ⅛–⅙ in. long; bracts linear, ¼ in. long. Perianth red-brown, ½ in. long; tube campanulate; segments linear, 3 times the length of tube. Stamens nearly as long as the segments; filaments filiform; anthers subglobose, minute. Style not overtopping the anthers.

Mozamb. Dist. British Central Africa: Nyasaland; Mount Zomba, 3000–5000 ft., *Kirk !*

3. **D. Fischeri,** *Baker.* Bulb oblong, 1 in. diam.; outer tunics pale, rigid. Leaves 3, contemporary with the flowers, erect, the two outer oblong, 3–4 in. long, under an inch broad, the inner lanceolate, narrowed to the base, membranous, glabrous. Peduncles 2 to a bulb, erect, fragile, above a foot long. Raceme moderately dense, cylindrical, 3–4 in. long; bracts obsolete; pedicels short, articulated at the apex, the lower recurved. Perianth permanently campanulate, ⅛ in. long; tube short; segments oblong, flat, brownish-white. Stamens shorter than the perianth; anthers small, oblong. Ovary globose; style short.

Mozamb. Dist. German East Africa, *Fischer*, 325 !
No specimen at Kew.

4. **D. Barteri,** *Baker in Journ. Linn. Soc.* xi. 423. Bulb large, globose. Leaves unknown, not contemporary with the flowers. Peduncle stiffly erect, moderately stout, 1½ ft. long. Raceme lax, above 2 ft. long, 18–21 lin. diam.; bracts minute; pedicels spreading, ½–¾ in. long, articulated at the apex. Perianth ⅙ in. long; tube very short; segments flat, linear-oblong with a pale margin and brown keel. Stamens half as long as the perianth-segments; filaments short, flattened. Capsule subglobose, deeply lobed, acutely angled, ⅓ in. diam.

Upper Guinea. Niger Territory: Nupe, *Barter*, 1183 !
A connecting link between *Drimia* and *Urginea*.

5. **D. Coleæ,** *Baker in Bot. Mag. t.* 7565. Bulb large, globose. Leaves contemporary with the flowers, oblong, 5–6 in. long, 2½ in. broad at the middle, glabrous, fleshy, spotted with dark green on a pale green ground. Peduncle spotted, shorter than the leaves. Raceme lax, 5–6 in. long; bracts minute; pedicels shorter than the flowers. Perianth green, ½ in. long; tube campanulate; segments linear, reflexed. Stamens rather shorter than the perianth segments; filaments bright mauve-purple; anthers minute. Style overtopping the anthers.

Nile Land. British Somaliland: Golis Range, *Miss Edith Cole !*
Described from living plants that flowered October 1896.

6. **D. angustitepala,** *Engl. Jahrb.* xv. 475. Bulb ovoid, nearly 1 in. diam. Leaves contemporary with the flowers, oblong, narrowed gradually to the base, 3–4 in. long, nearly 1½ in. broad. Peduncle 2–3 times the length of the leaves. Raceme lax, 4 in. long; bracts small,

lanceolate; pedicels as long as the flowers, purple. Perianth purple, $\frac{1}{3}$ in. long; segments narrowly linear, rather dilated at the base, Stamens rather shorter than the perianth-segments; filaments filiform. Ovary deeply 3-lobed; style exserted.

Nile Land. British East Africa: Ukamba, *Hildebrandt*, 2644!

No specimen at Kew.

7. **D. Hildebrandtii,** *Baker in Engl. Jahrb.* xv. 474. Bulb globose, above 1 in diam. Leaves 5–6, contemporary with the flowers, oblong-lanceolate, spotted, glabrous, 7–8 in. long, $1\frac{1}{4}$–$1\frac{1}{2}$ in. broad. Peduncle as long as the leaves. Raceme lax, cylindrical, 5-6 in. long; bracts deltoid, minute; pedicels as long as the flowers. Perianth $\frac{1}{2}$ in. long; tube campanulate; segments linear. Stamens as long as the perianth-segments. Capsule depresso-globose, acutely angled.

Nile Land. British East Africa: Mombasa, *Hildebrandt*, 2001! 2017!

8. **D. brevifolia,** *Baker*. Bulb ovoid, 3 in. diam., composed of many thick oblong scales. Leaves contemporary with the flowers, oblong-lanceolate, 3–4 in. long, an inch broad, erect, sessile, acute, narrowed to the base, membranous, glabrous. Peduncle erect, fragile, 6–9 in. long. Raceme lax, 6–9 in. long; bracts obsolete; pedicels $\frac{1}{2}$–$\frac{3}{4}$ in. long, articulated at the apex; upper flowers small, campanulate, sterile. Perianth whitish, oblong-cylindrical, $\frac{1}{4}$ in. long; tube short; segments linear, complicate. Stamens rather shorter than the perianth; filaments subulate, bright mauve-purple; anthers small, oblong. Capsule globose, $\frac{1}{3}$ in. diam.

Nile Land. Somaliland: near the River Daua, at Dolo, *Riva*, 1251!

No specimen at Kew.

9. **D. laxiflora**, *Baker in Journ. Linn. Soc.* xi. 422. Bulb and leaves unknown. Peduncle slender, fragile, 15–18 in. long. Raceme very lax, 6–8 in. long, 10–15-flowered; bracts minute; lower pedicels $\frac{1}{3}$–$\frac{1}{2}$ in. long. Perianth 4–$4\frac{1}{2}$ lin. long, reddish-brown; tube campanulate; segments oblong, twice as long as the tube. Stamens nearly as long as the perianth-segments; filaments flattened, twice as long as the anthers. Style slightly exserted.

Mozamb. Dist. Portuguese East Africa: Quilimane, *Kirk!*

22. **EUCOMIS**, L'Herit.; Benth. et Hook. f. Gen. Plant. iii. 813.

Perianth campanulate, polyphyllous, persistent; segments oblong, subequal, spreading, connate only at the very base. Stamens 6, shorter than the perianth, attached to the base of the segments; filaments subulate from a dilated base; anthers oblong, versatile. Ovary globose, sessile, 3-celled; ovules many, biseriate; style short, subulate; stigma capitate, minute. Capsule globose, loculicidally 3-valved. Seeds turgid or rather compressed; testa black or brown; albumen firm;

embryo cylindrical.—Rootstock a large tunicated bulb. Leaves all radical, oblong or lorate. Inflorescence a dense raceme, crowned with a coma of reduced leaves. Flowers greenish.

Species 10, the others all South African.

1. **E. zambesiaca,** *Baker in Gard. Chron.* 1886, xxv. 9. Bulb large, globose. Leaves sessile, lorate, subobtuse, 1–2 ft. long, 1½–2 in. broad above the middle, narrowed gradually to the base, scarcely at all crisped, not spotted or striped on the back. Peduncle terete, unspotted, 6–9 in. long. Raceme dense, oblong, 4–8 in. long; pedicels short, erecto-patent; bracts small, ovate. Perianth green, ½ in. long. Stamens half as long as the perianth. Style as long as the globose ovary. Capsule globose, obtusely trigonous, ⅓ in. diam.

Mozamb. Dist. British Central Africa: Nyasaland; Mambane, 6000 ft., *Kirk!* Mount Zomba, 5000–6000 ft., *Whyte! Johnston!* and without precise locality, *Buchanan!*

First flowered in England by Messrs. Wallace of Colchester in November 1880.

23. **ALBUCA**, Linn.; Benth. et Hook. f. Gen. Plant. iii. 809.

Perianth pollyphyllous; outer segments oblong, spreading at the apex; inner connivent, cucullate at the apex. Stamens 6, hypogynous, as long as the inner segments; filaments flattened or filiform; anthers oblong, all perfect or the 3 outer abortive. Ovary oblong, 3-celled, sessile; ovules many, superposed; style triquetrous or filiform; stigma usually 3-lobed. Capsule loculicidally 3-valved. Seeds numerous, compressed; testa membranous, black; albumen fleshy; embryo cylindrical.—Rootstock a tunicated bulb. Leaves all radical, linear or terete. Inflorescence a cylindrical or corymbose raceme; pedicels sometimes long; bracts persistent, membranous. Flowers large, white or yellow; segments with a broad keel of green or red-brown.

Species about 50, the others all South African except one Arabian species. The subgenus *Eualbuca* is not represented in Tropical Africa.

*FALCONERA. Style triquetrous, not longer than the ovary. Stamens all with perfect anthers.
- Perianth about ½ in. long.
  - Bracts small . . . . . 1. *A. myogaloides.*
  - Bracts very large . . . . . 2. *A. longibracteata.*
- Perianth ¾–1 in. long.
  - Leaves ⅛–½ in. broad . . . . . 3. *A. caudata.*
  - Leaves ¾–1 in. broad . . . . . 4. *A. nyikensis.*

**PALLASTEMA. Style subulate, usually longer than the ovary. Stamens all with perfect anthers.
- Perianth segments white, keeled with green.
  - Pedicels all short.
    - Perianth about ½ in. long.
      - Leaves subulate . . . . . 5. *A. subspicata.*
      - Leaves linear.
        - Bracts lanceolate-subulate . . . . 6. *A. galeata.*
        - Bracts ovate-acuminate . . . . 7. *A. tayloriana.*

Perianth about ¾ in. long.
Leaves ½ ft. long . . . . . 8. *A. Fleckii.*
Leaves 1–1½ ft. long . . . . . 9. *A. Allenæ.*
Perianth 1 in. long . . . . . 10. *A. Wakefieldii.*
Lower pedicels 1½ in. long . . . . . 11. *A. Donaldsoni.*
Perianth-segments yellow, keeled with green.
Perianth ½ in. long.
Leaf terete, usually solitary . . . . . 12. *A. monophylla.*
Leaves linear, 3–4 . . . . . 13. *A. Buchanani.*
Perianth ¾ in. long.
Leaves very short . . . . . 14. *A. hereroensis.*
Leaves long, linear.
Bracts small . . . . . 15. *A. Melleri.*
Bracts 1–1½ in. long . . . . . 16. *A. abyssinica.*
Perianth 1–1¼ in. long.
Leaves ¼–⅓ in. broad.
Bracts small . . . . . 17. *A. Lugardi.*
Lower bracts 1–1½ in. long . . . . 18. *A. Schweinfurthii.*
Leaves 1 in. or more broad.
Pedicels all short.
Bracts lanceolate, acuminate . . . . 19. *A. chlorantha.*
Bracts linear from an ovate base . . . 20. *A. angolensis.*
Lower pedicels 1 in. long . . . . 21. *A. Bainesii.*
Perianth-segments pale green with a narrow pale border 22. *A. Schinzii.*
Colour of flowers uncertain . . . . . 23. *A. purpurascens.*; 24. *A. Fischeri.*; 25. *A. Steudneri.*

1. **A. myogaloides,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 250. Bulb ovoid, 1 in. diam.; outer tunics brown, bristly at the apex. Leaves 3–4, erect, narrowly linear, glabrous, 1–2 ft. long, ¼–⅓ in. broad. Peduncle slender, 1–1½ ft. long. Raceme lax, 6–12-flowered; flowers erect; pedicels ascending; lower 2–3 in. long; bracts lanceolate; lower 6–9 lin. long. Perianth ½–⅝ in. long; segments white, with a broad green or red-brown keel. Anthers all perfect. Style triquetrous, as long as the ovary. Capsule oblong, as long as the perianth.—Engl. Hochgebirgsfl. Trop. Afr. 166.

Lower Guinea. Angola: Huilla; Morro de Monino, on high rocks in the sub-temperate region, *Welwitsch,* 3840 !

Nearly allied to *A. caudata,* Jacq.

2. **A. longibracteata,** *Engl. Jahrb.* xv. 472. Bulb and leaf unknown. Raceme 8 in. long, dense, many-flowered; lower pedicels ½ in. long; bracts filiform from a lanceolate base; lower 3–4 in. long. Perianth ½ in. long; segments oblong, with a broad green keel. Anthers all perfect; filaments lanceolate, three times the length of the anthers. Ovary ovoid, rather shorter than the style.

Nile Land. British East Africa: Ukamba; Kitui, *Hildebrandt,* 2646.

No specimen at Kew.

3. **A. caudata,** *Jacq. Ic. t.* 442. Bulb globose, 2–3 in. diam. Leaves 4–6, linear, glabrous, 1 ft. long, ⅓–½ in. broad. Peduncle

1–1½ ft. long. Raceme deltoid, 6–15-flowered; pedicels ascending; lower 3–4 in. long; bracts lanceolate, ¾–1 in. long. Perianth ¾ in. long; segments white, with a broad brown keel. Anthers all fertile; filaments lanceolate-subulate. Style triquetrous, as long as the ovary; stigma 3-lobed. Capsule oblong, ¾ in. long.—Baker in Saund. Ref. Bot. t. 45, and in Fl. Cap. vi. 458; *Ornithogalum Kirkii*, Baker in Journ. Linn. Soc. xiii. 279.

Mozamb. Dist. Portuguese East Africa: Lower Zambesi, at Shupanga, *Kirk!* British Central Africa: Nyasaland; in woods between Blantyre and Matope, *Scott!* Mount Sochi, *Scott-Elliot*, 8615! Mlanje Plateau, *McClounie!*

Also in South Africa.

4. **A. nyikensis,** *Baker.* Leaves linear, glabrous, tapering gradually to the point, ¾–1 in. broad low down. Peduncle stout, erect. Raceme lax, cylindrical, finally 1 ft. long; pedicels ascending; lower 1½–2 in. long; bracts lanceolate, acuminate; lower 1 in. long. Perianth 1 in. long; segments linear-oblong, white, with a many-nerved brown keel. Stamens all perfect, rather shorter than the perianth; filaments linear, dilated at the base. Ovary oblong, ¼ in. long; style stout, rather longer than the ovary. Capsule oblong, ¾ in. long.

Mozamb. Dist. British Central Africa: Nyasaland; Nyika Plateau, 6000–7000 ft., *Whyte*, 246!

5. **A. subspicata,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 251. Bulb subglobose, ½–¾ in. diam.; outer tunics membranous, dull brown. Leaves 3–4, erect, subulate, ½–1 ft. long, 1 lin. diam. low down. Peduncle flexuose, 4–6 in. long. Raceme 4–12-flowered, 2–4 in. long; pedicels short, ascending; lower ⅛–¼ in. long; bracts lanceolate; lower ½–¾ in. long. Perianth ½ in. long; segments white, with a broad green keel. Stamens all perfect; anthers oblong; filaments linear, subulate. Style subulate, reaching to the tip of the perianth; stigma capitate.—Engl. Hochgebirgsfl. Trop. Afr. 166.

Lower Guinea. Angola: Huilla; Morro de Monino, on high rocks in the sub-temperate region, *Welwitsch*, 3839!

6. **A. galeata,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 251. Bulb small, ovoid; outer tunics brown, membranous. Leaves linear, acuminate, 1½–2 ft. long, ¼–⅓ in. broad, channelled down the face. Peduncle slender, 1–2 ft. long. Raceme lax, 3–5 in. long; pedicels erecto-patent; lower ½ in. long; bracts lanceolate-subulate, ¼–½ in. long. Perianth ½–⅝ in. long; segments white, with a broad green keel, the three upper subgaleate. Stamens all fertile; anthers oblong, ⅛ in. long; filaments linear-subulate. Style subulate, longer than the ovary.

Lower Guinea. Angola; in stony woods near Giucanda, *Welwitsch*, 3837!

7. **A. tayloriana,** *Rendle in Journ. Linn. Soc.* xxx. 424. Bulb ovoid, ¾ in. diam. Leaves narrowly linear. Peduncle nearly 2 ft.

long. Raceme laxly 10–12-flowered, cylindrical, 4–5 in. long; lower pedicels $\frac{1}{3}$ in. long; bracts ovate, acuminate, as long as the pedicels. Perianth $\frac{1}{2}$ in. long; segments greenish-white, with a broad 7-nerved purple keel. Anthers oblong, all fertile; filaments linear-subulate. Style subulate, more than twice the length of the ovary.

Nile Land. British East Africa: Rabai Hills, near Mombasa, at Jomvu, *Taylor!*

Mozamb. Dist. German East Africa: between Uyui and the coast, at Mirana-kidiri-Porani, *Taylor!*

8. **A. Fleckii,** *Schinz in Bull. Herb. Boiss.* iv. *App.* iii. 40. Bulb ovoid-globose, 3–4 in. diam. Leaves lanceolate, acute, $\frac{1}{2}$ ft. long, concave in the lower part of the face. Raceme cylindrical, 1 ft. long; pedicels $\frac{1}{2}$ in. long; bracts linear-lanceolate, cuspidate, $\frac{1}{6}$ in. long. Perianth $\frac{3}{4}$ in. long; segments oblong, whitish, $\frac{1}{4}$ in. broad. Stamens all fertile; alternate filaments auricled at the base. Style nearly $\frac{1}{2}$ in. long.

Lower Guinea. German South-west Africa: Hereroland; between Horn Krantz and the Gans Bergen, on granite, *Fleck*, 137.

No specimen at Kew.

9. **A. Allenæ,** *Baker in Gard. Chron.* 1888, iii. 10. Bulb globose, 2 in. diam.; outer tunics pale brown. Leaves about 6, ensiform, fleshy, bright green, glabrous, 1–1$\frac{1}{2}$ ft. long, 1$\frac{1}{2}$–2 in. broad. Peduncle stiffly erect, 3–4 ft. long. Raceme lax, cylindrical, a foot long; pedicels ascending, the lower under 1 in. long; bracts lanceolate, acuminate; upper protruding beyond the buds. Perianth white, $\frac{3}{4}$ in. long; segments oblong, broadly keeled with green; inner spreading at the tip in the expanded flower. Filaments linear, sharply constricted above a quadrate base; anthers oblong, all perfect. Style subulate, $\frac{1}{2}$ in. long; stigma capitate.

Mozamb. Dist. Zanzibar, cultivated specimen received in December 1887, from *Sir C. W. Strickland!* British Central Africa: North Nyasaland, *Whyte!*

10. **A. Wakefieldii,** *Baker in Bot. Mag. t.* 6429. Bulb ovoid, 1$\frac{1}{2}$ in. diam.; tunics membranous, pale brown. Leaves 4–5, erect linear, 1–1$\frac{1}{2}$ ft. long, 1 in. broad low down. Peduncle terete, longer than the leaves. Raceme very lax, cylindrical, 10–12-flowered; pedicels ascending, the lower under 1 in. long; bracts small, lanceolate. Perianth 1 in. long; segments oblong, white with a broad green keel. Anthers all perfect; filaments panduriform in the lower half. Ovary oblong; style subulate, more than twice as long as the ovary.—Regel, Gartenfl. t. 1031; *A. Elwesi*, Regel, Descr. vii. 25 2

Nile Land. British Somaliland, *Miss Edith Cole!* British East Africa: near Mombasa, cultivated specimen, *Wakefield!*

Mozamb. Dist. German East Africa: Usagara Mountains, *Hannington!* Lake Nyassa, *Hort. Strickland!*

Introduced into cultivation by the Rev. T. Wakefield.

11. **A. Donaldsoni,** *Rendle in Journ. Bot.* 1896, 131. Bulb not seen. Leaves linear, acuminate, with involute edges, reflexed, 1 ft. long, 4–5 lin. broad low down. Peduncle shorter than the leaves. Raceme dense, 6 in. long, 3–4 in. diam.; pedicels ascending; lower $1\frac{1}{2}$ in. long; bracts linear from a triangular base, lower 2 in. long. Perianth 8 lin. long; segments cucullate at the apex, white with a broad 3–5-nerved brown keel. Stamens all perfect; anthers $\frac{1}{4}$ in. long; filaments subulate from a triangular base. Ovary oblong, $\frac{1}{4}$ in. long; style subulate, as long as the ovary.

Nile Land. Somaliland; low country, east of the Shebele River, *Donaldson Smith.*

No specimen at Kew.

12. **A. monophylla,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 251. Bulb globose, under 1 in. diam.; outer tunics membranous, brown. Leaf usually solitary, erect, terete, 1 ft. long, under 1 lin. diam. Peduncle slender, shorter than the leaf. Raceme lax, 2–6-flowered; pedicels ascending, $\frac{1}{4}$–$\frac{1}{2}$ in. long; bracts small, lanceolate. Perianth $\frac{1}{2}$ in. long; segments yellow, with a broad green keel. Anthers all perfect, oblong, $\frac{1}{2}$ lin. long; filaments lanceolate-subulate. Style subulate, 2–3 times the length of the ovary.—*A. juncifolia,* Welw. Herb. not of Baker.

Lower Guinea. Angola: Pungo Andongo, *Welwitsch,* 3838!

13. **A. Buchanani,** *Baker in Gard. Chron.* 1892, xii. 488. Bulb small, ovoid. Leaves about 4, linear, acuminate, erect, 1–$1\frac{1}{2}$ ft. long, channelled down the face, obscurely ciliated on the margin. Peduncle slender, as long as the leaves. Raceme lax, 3–4 in. long; pedicels ascending, $\frac{1}{4}$–$\frac{1}{2}$ in. long; bracts lanceolate, as long as the pedicels. Perianth $\frac{1}{2}$ in. long; segments yellow, with a broad green keel. Anthers oblong, all perfect; filaments linear from an ovate base. Ovary small, ovoid; style subulate, $\frac{1}{3}$ in. long

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, *Buchanan!*

Described from a plant that flowered at Kew, October 1892.

14. **A. hereroensis,** *Schinz in Bull. Herb. Boiss.* iv. *App.* iii. 40. Bulb. 3 in. diam., crowned with a ring of fibres. Leaves linear-lanceolate, 4 in. long, concave in the lower part of the face. Raceme cylindrical, 8 in. long; pedicels ascending, the lower $\frac{1}{4}$ in. long; bracts $\frac{1}{5}$ in. long. Perianth $\frac{3}{4}$ in. long; segments oblong, $\frac{1}{4}$ in. broad, yellow with a broad brown keel. Stamens all fertile; filaments auricled at the base. Style as long as the ovary.

Lower Guinea. German South-west Africa: Hereroland; at Horn Krantz, on granite, *Fleck,* 139! and without precise locality, *Schinz,* 2!

15. **A. Melleri,** *Baker.* Bulb ovoid, $1\frac{1}{2}$ in. diam. Leaves 4–5, linear, $1\frac{1}{2}$ ft. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad low down, clasping the base of the peduncle. Peduncle 1–2 ft. long. Raceme very lax, 6–9 in. long;

pedicels very short; bracts linear, $\frac{1}{4}$–$\frac{1}{3}$ in. long. Perianth $\frac{3}{4}$ in. long; segments oblong, green, with a narrow yellow margin. Stamens rather shorter than the perianth; anthers all perfect; filaments much dilated towards the base. Style subulate, $\frac{1}{3}$–$\frac{1}{2}$ in. long. Capsule oblong, obtusely angled, $\frac{3}{4}$ in. long.—*Ornithogalum Melleri*, Baker in Journ. Linn. Soc. xiii. 280.

Nile Land. Somaliland: Hammar, *Miss Edith Cole!* British East Africa: 40–60 miles from the coast, *Johnston!*

Mozamb. Dist. Portuguese East Africa: Lower Zambesi; Shupanga Forest, *Scott!* British Central Africa: Nyasaland; Manganja Hills, near Mount Sochi, *Meller!* at Murchison Falls, on the River Shire, *Meller!* Northern Zambesia: Boruma, *Menyharth*, 1241!

16. **A. abyssinica,** *Dryand. in Vet. Acad. Nya Handl. Stockh.* 1784, 297. Bulb globose, 1–2 in. diam.; outer tunics dull brown, membranous. Leaves 6–8, erect, linear, 2–3 ft. long, $\frac{1}{2}$–1 in. broad low down. Peduncle stiffly erect, $1\frac{1}{2}$–3 ft. long. Raceme moderately dense, cylindrical, $\frac{1}{2}$–1 ft. long; pedicels ascending, $\frac{1}{4}$–$\frac{1}{2}$ in. long; bracts lanceolate-subulate, protruding beyond the buds; lower 1–$1\frac{1}{2}$ in. long. Perianth $\frac{3}{4}$ in. long; segments linear-oblong, pale yellow, with a broad green or red-brown keel. Stamens all perfect; anthers small, oblong; filaments lanceolate-subulate. Style subulate, $\frac{1}{2}$ in. long.—Jacq. Ic. t. 64; Red. Lil. t. 195; Kunth, Enum. iv. 376; Baker in Journ. Linn. Soc. xiii. 289; Engl. Hochgebirgsfl. Trop. Afr. 165; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 75.

Nile Land. Eritrea: in the neighbourhood of Acrur, 6000 ft., *Schweinfurth & Riva*, 2151! Geleb, 5400 ft., *Schweinfurth & Riva*, 1417, 1528, 1824; in the great valley above Ginda, 3200–4800, *Schweinfurth & Riva*, 513; Donkollo Heights, near Ginda, 3200 ft., *Schweinfurth & Riva*, 269, 396; Mount Farach, near Ailet, *Schweinfurth & Riva*, 461; Saganeiti, *Schweinfurth & Riva*, 822, 1242; and Mount Kube, 5900 ft., *Schweinfurth & Riva*, 1508. Abyssinia: Begemeder; Jan Meda, 8500–10,000 ft., *Schimper*, 486! and without precise locality, *Schimper*, 756! *Plowden!*

Also in Arabia.

17. **A. Lugardi,** *Baker*. Leaves firm, linear, glabrous, above 1 ft. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad low down. Peduncle moderately stout, stiffly erect, 2 ft. long. Raceme 1 ft. long, many-flowered, cylindrical; pedicels ascending, the lower under 1 in. long; bracts small, lanceolate. Perianth nearly 1 in. long; segments oblong, bright yellow, with a many-nerved broad green keel. Stamens nearly as long as the perianth; anthers oblong, $\frac{1}{8}$ in. long; filaments slightly flattened. Style subulate, just overtopping the anthers.

Mozamb. Dist. British Central Africa: Ngamiland: Botletle Valley, *Lugard*, 216!

18. **A. Schweinfurthii,** *Engl. Jahrb.* xv. 473. Bulb ovoid, 1 in. diam. Leaves linear, 2–$2\frac{1}{2}$ ft. long, $\frac{1}{3}$ in. broad. Peduncle longer than the leaves. Raceme 20–30-flowered, above 1 ft. long; pedicels very short; bracts lanceolate, acuminate; lower 1–$1\frac{1}{2}$ in. long. Perianth nearly 1 in. long; segments linear-oblong, pale yellow, with a broad

red-brown keel. Stamens all perfect; anthers linear-oblong; filaments linear, 5–6 times the length of the anthers. Style subulate, twice the length of the ovoid-oblong ovary. Capsule ovoid, above $\frac{1}{2}$ in. long.

Nile Land. British East Africa: Niamniam; at the River Boddo, near Abu Samat's Seriba, *Schweinfurth*, ser. iii., 168.

No specimen at Kew.

19. **A. chlorantha,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 251. Bulb globose, $1\frac{1}{2}$ in. diam.; outer tunics membranous, brown. Leaves several, ensiform, $1\frac{1}{2}$–2 ft. long, above 1 in. broad low down, tapering gradually to a long point. Peduncle 2–3 ft. long. Raceme moderately dense, cylindrical, 1 ft. long; pedicels very short; bracts lanceolate, acuminate, the lower 1 in. long. Perianth about 1 in. long; segments linear-oblong, yellow, with a broad green keel. Stamens all fertile; anthers oblong, $\frac{1}{6}$ in. long; filaments linear-subulate. Style subulate, $\frac{1}{2}$ in. long.

Lower Guinea. Angola: Pungo Andongo; banks of the River Cuanza, *Welwitsch*, 3835!

20. **A. angolensis,** *Welw. ex Baker in Saund. Ref. Bot. t.* 336. Bulb large, ovoid; outer tunics membranous. Leaves 6–8, suberect, ensiform, 2–3 ft. long, 1 in. broad low down, narrowed gradually from the middle to the apex. Peduncle stiffly erect, reaching a length of 5–6 ft. Raceme cylindrical, dense upwards, 1–$1\frac{1}{2}$ ft. long; pedicels short, erecto-patent, the lower $\frac{1}{4}$–$\frac{1}{2}$ in. long; bracts linear from an ovate base, 1–$1\frac{1}{2}$ in. long, protruding beyond the buds. Perianth 1 in. or more long; segments linear-oblong, yellow, with a broad green or red-brown keel. Stamens all fertile; anthers oblong; filaments subulate from a lanceolate base. Style slender, $\frac{1}{2}$–$\frac{5}{8}$ in. long.—Baker in Trans. Linn. Soc. ser. 2, Bot. i. 251; Journ. Linn. Soc. xiii. 290; Engl. Hochgebirgsfl. Trop. Afr. 166. *A abyssinica*, Baker in Gard. Chron. 1872, 392.

Lower Guinea. Angola: Huilla; in meadows near Lopollo, *Welwitsch*, 3836! and without precise locality, *Antunes!* Malange, *Buchner!* Pungo Andongo, *Mechow!*

South Central. Lunda, *Pogge*, 433.

21. **A. Bainesii,** *Baker in Journ. Linn. Soc.* xiii. 290. Leaves linear, $1\frac{1}{2}$–2 ft. long, 1 in. broad low down, channelled down the face. Peduncle stout. Raceme moderately dense, 15–18 in. long; pedicels ascending, lower 1 in. long; bracts lanceolate-subulate, protruding beyond the buds; lower as long as the pedicels. Perianth 1–$1\frac{1}{4}$ in. long; segments oblong, pale yellow, with a many-nerved red-brown keel. Stamens all fertile; anthers small, oblong; filaments lanceolate-subulate, $\frac{3}{4}$ in. long. Style subulate, 8–9 lin. long.

Mozamb. Dist. British Central Africa: Ngamiland; between Kobis and North Shaw Valley, *Baines!*

22. **A. Schinzii,** *Baker.* Bulb globose, 2–3 in. diam. Leaves 4, erect, lanceolate or linear, sheathing the lower part of the stem, the outer one the largest, 6–8 in. long, 1 in. broad at the middle.

Peduncle moderately stout, rather overtopping the leaves. Raceme dense, subcorymbose, 3 in. long; pedicels erecto-patent, the lower 1½ in. long; bracts oblong-lanceolate, the lower ½ in. long. Perianth ⅓ in. long; segments oblong, green, with a very narrow pale edge. Stamens shorter than the perianth; filaments lanceolate. Style subulate, ⅛ in. long.

Lower Guinea. German South-west Africa: Hereroland, *Schinz!*

No specimen at Kew.

23. **A. purpurascens,** *Engl. Jahrb.* xv. 473. Bulb globose, 2½–3 in. diam., crowned with the bristly relics of the old leaves. Leaves linear, 1–1½ ft. long. Peduncle rather longer than the leaves. Raceme 10–15-flowered, 6–8 in. long; pedicels erecto-patent, half as long as the flowers; bracts lanceolate, lower above ½ in. long. Perianth ⅓–½ in. long; segments linear-oblong, ⅛ in. broad, with a broad purplish keel. Stamens all fertile; filaments lanceolate, 2–3 times the length of the linear-oblong anthers. Ovary ovoid. Style subulate, twice the length of the ovary. Capsule ovoid, ⅓–½ in. long.

Nile Land. British East Africa: Jur; near Kurshook Ali's Seriba, *Schweinfurth,* 1659! Jur Ghattas, *Schweinfurth,* 2129! and the west bank of the River Jur, *Schweinfurth,* 1504, 1522, 1907. Mittu; Kuraggera, *Schweinfurth,* 2786! and Dimindu, *Schweinfurth,* 3796.

No specimen at Kew.

24. **A. Fischeri,** *Engl. Hochgebirgsfl. Trop. Afr.* 165. Leaves linear, acuminate, 1½ ft. long, 1 in. broad at the middle. Peduncle rather longer than the leaves. Raceme lax, 9–10 in. long; pedicels finally as long as the bracts; bracts linear-subulate, ⅓–½ in. long. Perianth above ½ in. long; segments linear-oblong, ⅛–⅙ in. broad, with a broad green keel. Stamens all fertile; filaments linear-subulate from a broad base. Style slender, 3 times the length of the ovary. Capsule ovoid, above ½ in. long.

Mozamb. Dist. German East Africa: at Wadiboma, August 1885, *Fischer,* 598 (*ex Engler*). The locality intended is probably Kwediboma, near Mgera, in Nguru District.

No specimen at Kew.

25. **A. Steudneri,** *Schweinf. & Engl. in Engl. Jahrb.* xv. 472. Bulb above 1 in. diam. Leaves linear, 6–10 in. long, ⅓–½ in. broad low down. Peduncle 1 ft. or more long. Raceme lax, 8–10-flowered; pedicels erecto-patent, half as long as the flowers; bracts lanceolate, acuminate; lower above ½ in. long. Perianth above ½ in. long; segments linear, ⅒ in. broad, with a broad green keel. Stamens all fertile; anthers small, oblong; filaments lanceolate. Style filiform, twice as long as the ovary. Capsule oblong, ½ in. long.

Nile Land. Galabat, *Steudner,* 449.

No specimen at Kew.

24. **URGINEA,** Steinh.; Benth. et Hook. f. Gen. Pl. iii. 810.

Perianth polyphyllous; segments oblong, subequal, spreading, with a 1- or 3–5-nerved brown keel. Stamens 6, shorter than the perianth, attached to the base of the perianth-segments; filaments filiform or slightly flattened; anthers 6, small, versatile. Ovary sessile, ovoid; ovules several in a cell, superposed; style subulate; stigma small, capitate. Capsule deeply 3-lobed, loculicidally 3-valved. Seeds flat, uniseriate; testa membranous, black or brown-black; albumen fleshy; embryo cylindrical.—Rootstock a tunicated bulb. Leaves linear or terete, often not developed with the flowers. Inflorescence racemose; bracts membranous, usually, especially the lower, spurred at the base. Flowers whitish, never bright blue.

Species 40–50. Also in South Africa, the Mediterranean Region, and India.

Perianth-segments 1-nerved on the back.
- Raceme oblong or cylindrical.
  - Perianth $\frac{1}{8}$–$\frac{1}{6}$ in. long.
    - Raceme 1–6 in. long.
      - Spur of lower bracts minute . . . . 1. *U. mandalensis.*
      - Spur of lower bracts large . . . . 2. *U. Nyasæ.*
    - Raceme 1–1$\frac{1}{2}$ ft. long.
      - Lower pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long . . . . 3. *U. psilostachya.*
      - Lower pedicels $\frac{1}{2}$–$\frac{3}{4}$ in. long . . . . 4. *U. micrantha.*
  - Perianth $\frac{1}{4}$ in. long.
    - Lower pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long.
      - Bulb globose . . . . . 5. *U. simensis.*
      - Bulb oblong . . . . . 6. *U. sanguinea.*
    - Lower pedicels $\frac{3}{4}$–1 in. long.
      - Keel of perianth-segments green . . . 7. *U. viridula.*
      - Keel of perianth-segments red-brown . . 8. *U. altissima.*
  - Raceme few-flowered . . . . . 9. *U. pauciflora.*
  - Raceme dense, subglobose.
    - Peduncle very short.
      - Perianth $\frac{1}{6}$ in. long . . . . . 10. *U. Johnstoni.*
      - Perianth $\frac{1}{3}$ in. long . . . . . 11. *U. brachystachys.*
    - Peduncle long . . . . . 12. *U. Bragæ.*

Perianth-segments 3–5 nerved on the back.
- Bracts deltoid, minute.
  - Capsule oblong, subacute . . . . . 13. *U. indica.*
  - Capsule globose . . . . . 14. *U. zambesiaca.*
- Bracts lanceolate, large.
  - Perianth $\frac{1}{6}$–$\frac{1}{5}$ in. long . . . . . 15. *U. petitiana.*
  - Perianth $\frac{1}{4}$–$\frac{1}{3}$ in. long.
    - Raceme 3–6 in. long.
      - Leaves 7–8 in. long . . . . . 16. *U. tayloriana.*
      - Leaves 1–2 ft. long . . . . . 17. *U. angolensis.*
    - Raceme 1–1$\frac{1}{2}$ ft. long . . . . . 18. *U. comosa.*
  - Perianth $\frac{1}{2}$ in. long . . . . . 19. *U. Beccarii.*
  - Perianth $\frac{1}{2}$–$\frac{3}{4}$ in. long . . . . . 20. *U. nigritana.*
  - Perianth 1 in. long . . . . . 21. *U. acinacifolia.*

1. **U. mandalensis,** *Baker.* Bulb small, globose. Leaves hysteranthous, unknown. Peduncle very slender, 3–4 in. long. Raceme lax,

1 in. long; pedicels short, ascending; bracts ovate, minutely spurred. Perianth campanulate, $\frac{1}{8}$ in. long; segments linear-oblong, white with a 1-nerved brown keel. Stamens shorter than the perianth; anthers oblong, small.

Mozamb. Dist. British Central Africa: Nyasaland; Ndirandi Mountain, near Blantyre, growing on tufts of sedge, *Scott-Elliot*, 8476!

2. **U. Nyasæ,** *Rendle in Trans. Linn. Soc. ser.* 2, *Bot.* iv. 50. Bulb small. Leaves hysteranthous, not seen. Peduncle very slender, $\frac{1}{2}$ ft. long. Raceme moderately lax, cylindrical, 2–6 in. long; pedicels ascending, lower $\frac{1}{6}$ in. long; lower bracts small, ovate, with a large subulate spur. Perianth campanulate, $\frac{1}{6}$ in. long; segments oblong-lanceolate, white with a 1-nerved red-brown keel. Stamens much shorter than the perianth; anthers oblong, small; filaments linear-subulate.

Mozamb. Dist. British Central Africa: Nyasaland; Mount Mlanje, 6000 ft., *Whyte! McClounie*, 72! and without precise locality, *Buchanan*.

3. **U. psilostachya,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 247. Bulb globose, 4–6 in. diam.; tunics whitish, coriaceous. Leaves 5–6, produced after the flowers, firm, ensiform, glabrous, $1\frac{1}{2}$–2 ft. long, under 1 in. broad. Peduncle moderately stout, 2–3 ft. long. Raceme lax, cylindrical, 1–$1\frac{1}{2}$ ft. long; lower pedicels spreading, $\frac{1}{4}$–$\frac{1}{3}$ in. long; bracts minute, linear, spurred near the base. Perianth campanulate, $\frac{1}{6}$ in. long; segments linear-oblong, whitish, with a 1-nerved green or red-brown keel. Stamens nearly as long as the perianth; anthers oblong; filaments linear-subulate. Capsule globose, acutely angled, $\frac{1}{3}$ in. diam.

Lower Guinea. Loango; common near the sea, *Thollon*, 1310! Lower Congo; Post of Ganciu, *Brazza*. Angola: Cazengo; on dry sandy hills, *Welwitsch*, 3807!

4. **U. micrantha,** *Solms in Schweinf. Beitr. Fl. Æthiop.* 294. Bulb very large, with thick brown tunics. Leaves linear, not developed with the flowers. Peduncle stiffly erect, 1–2 ft. long. Raceme moderately dense, cylindrical, 1–$1\frac{1}{2}$ ft. long; pedicels rigid, erecto-patent, articulated at the apex, the lower $\frac{1}{2}$–$\frac{3}{4}$ in. long; bracts minute, lanceolate, or deltoid, the lower shortly spurred. Perianth $\frac{1}{6}$ in. long; segments oblong, with a 1-nerved brown keel. Stamens shorter than the perianth; anthers minute, oblong. Capsule globose, acutely angled, $\frac{1}{4}$ in. diam.—Baker in Journ. Linn. Soc. xiii. 217; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 76, 111. *Scilla micrantha*, A. Rich. Tent. Fl. Abyss. ii. 328.

Upper Guinea. North bank of the Gambia, *Ozanne!* Dagomba: Salaga, on the Upper Volta, *Krause!* Lagos: on rocks at Ado, and on the road to Ischin, *Rowland!*

Nile Land. Eritrea: near Acrur, 6000 ft., *Schweinfurth & Riva*, 1823! on mountains near Keren, 4500–5900 ft., *Schweinfurth & Riva*, 997, 1801. Abyssinia, *Quartin-Dillon!* British East Africa: Jur; Kurshook Ali's Seriba, *Schweinfurth*

ser. iii. 160! Abu Guroon's Seriba, *Schweinfurth*, ser. iii. 161! Mittu; at Reggo, *Schweinfurth*, 2789! Madi; on rocky ground, *Speke & Grant*, 702!

Lower Guinea. French Congo; between Brouse and Zenze, *Laurent!*

Mozamb. Dist. German East Africa: Karague; on dry hill sides, 4000–5000 ft., *Scott-Elliot*, 8148!

5. **U. simensis,** *Schweinf. Beitr. Fl. Æthiop.* 294. Bulb globose, 3–4 in. diam.; outer tunics pale brown, membranous. Leaves not seen, not contemporary with the flowers. Peduncle short, stiffly erect, $\frac{1}{2}$–2 ft. long. Raceme dense, 3–4 in. long; pedicels ascending; lower $\frac{1}{4}$–$\frac{1}{3}$ in. long; bracts small, linear; lower $\frac{1}{6}$–$\frac{1}{4}$ in. long, obscurely spurred. Perianth campanulate, $\frac{1}{3}$ in. long; segments linear-oblong, white, with a 1-nerved pale brown keel. Stamens shorter than the perianth; anthers small; filaments linear; style not exserted. Capsule globose, $\frac{1}{3}$–$\frac{1}{2}$ in. diam.—Baker in Journ. Linn. Soc. xiii. 222; Engl. Hochgebirgsfl. Trop. Afr. 166. *Scilla simensis*, Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 327.

Nile Land. Abyssinia: Samen; on mountain sides, near Abbu Mekanna and Debra Joa, *Schimper!* Shoa; mountains of Touglete District, *Petit.*

Very near the well-known *U. maritima*, Baker, which is widely spread in the Mediterranean region, and occurs also at the Cape.

6. **U. sanguinea,** *Schinz in Verhand. Bot. Ver. Prov. Brandenb.* xxxi. 219. Bulb oblong, 3 in. long, 2 in. diam.; tunics brown, coriaceous. Leaves not seen, not developed till after the flowers. Peduncle long, moderately stout, stiffly erect. Raceme cylindrical, dense, 1 ft. long; pedicels short, erecto-patent; lower finally $\frac{1}{4}$–$\frac{1}{3}$ in. long; bracts minute, lanceolate, deciduous. Perianth $\frac{1}{4}$ in. long; segments linear-oblong, white, with a 1-nerved brown keel. Stamens shorter than the perianth; anthers minute, oblong; filaments slightly flattened, style not exserted. Capsule globose, $\frac{1}{3}$ in. diam.

Lower Guinea. German South-west Africa: Amboland; near Olukonda, "the first flower before the rains," *Schinz*, 8! 18! 25. Hereroland; Horn Krantz, *Fleck*, 136, and Omambonde, *Schinz.*

7. **U. viridula,** *Baker.* Bulb globose, 3 in. diam. Leaves not seen, not developed till after the flowers. Peduncle stout, stiffly erect, 3 ft. long. Raceme lax, cylindrical, nearly 1 ft. long; pedicels ascending; lower $\frac{3}{4}$ in. long; bracts membranous, white, minute, lanceolate from an ovate base. Perianth oblong, $\frac{1}{4}$ in. long; segments linear-oblong, whitish, with a 1-nerved green keel. Stamens shorter than the perianth; anthers oblong, much shorter than the linear filaments. Style not exserted.

Lower Guinea. Congo, cultivated specimen, *Hort. Bull!*
Flowered September 1886.

8. **U. altissima,** *Baker in Journ. Linn. Soc.* xiii. 221. Bulb globose, 4–6 in. diam.; outer tunics brown, coriaceous. Leaves 5–6, not contemporary with the leaves, lorate-lanceolate, glabrous, 1–1½ ft. long. Peduncle stout, stiffly erect, 3–4 ft. long. Raceme cylindrical,

1–2 ft. long; pedicels rigid, spreading or erecto-patent, articulated at the apex, the lower ¾–1 in. long; bracts small, lanceolate, spurred. Perianth campanulate, ¼ in. long; segments oblong, with a 1-nerved red-brown keel. Stamens rather shorter than the perianth; anthers small, oblong; filaments slightly flattened. Capsule globose, acutely angled, ⅓ in. diam.—Fl. Cap. vi. 470; *Ornithogalum altissimum*, Linn. f. Suppl. 199; Kunth, Enum. iv. 357; *O. giganteum*, Jacq. Hort. Schoen, t. 87; *Drimia altissima*, Gawl. Bot. Mag. t. 1074.

Upper Guinea. Sierra Leone: near Kafogo, *Scott-Elliot*, 5537! Niger Territory: Nupe; between Ilorin and the Niger, *Barter*, 3432!

Lower Guinea. Loango: near Ponta Negra, *Soyaux*, 117!

Mozamb. Dist. British Central Africa: Urungu; Fwambo, 5000, *Carson!* Nyasaland; Magomero, *Meller!* Shire Valley, at the foot of Mpimbe Hill, *Kirk!* between Blantyre and Matope, in woods, 2300 ft., *Scott!* Mount Mlanje, *Whyte!* Zomba, and vicinity, 2500–3500 ft., *Whyte!* Shire Highlands, *Buchanan!*

Also in South Africa.

9. **U. pauciflora,** *Baker*. Bulb oblong, 1 in. diam.; outer tunics white. Leaves not developed with the flowers, not seen. Peduncle slender, stiffly erect, 2½ in. long. Flowers 2–3, approximate; pedicels short, ascending; bracts small, lanceolate, not spurred. Perianth campanulate, ¼ in. long; segments linear-oblong, white with a 1-nerved broad brown keel. Stamens shorter than the perianth; anthers linear-oblong, a line long; filaments flattened, ⅛ in. long. Style not exserted.

Upper Guinea. Sierra Leone: near Wallia, on the River Scarcies, in dry, bare, and burnt places, *Scott-Elliot*, 4580!

10. **U. Johnstoni,** *Baker*. Bulb and leaves not seen. Peduncle erect, 1 in. long. Raceme corymbose, 15–20 flowered, 1¼–1½ in. long; pedicels erecto-patent; lower ½ in. long; upper growing gradually shorter; bracts minute, lanceolate, not spurred. Perianth campanulate, ⅙ in. long; segments linear-oblong, white with a very distinct 1-nerved brown keel. Stamens shorter than the perianth; anthers oblong, minute; filaments linear. Style not exserted.

Lower Guinea. Angola: near the River Cunene, *Johnston!*

11. **U. brachystachys,** *Baker in Engl. Jahrb.* xv. 474. Bulb globose, 3 in. diam. Leaves unknown, not contemporary with the flowers. Peduncle very short. Raceme congested, globose; pedicels above ½ in. long; bracts minute, deltoid. Perianth ⅓ in. long; segments linear-oblong, white with a 1-nerved red-brown keel Stamens shorter than the perianth; anthers minute, oblong.

Mozamb. Dist. German East Africa: Unyamwezi; at Kakoma, on dry, burnt ground, *Böhm*, 62!

No specimen at Kew.

12. **U. Bragæ,** *Engl. Pfl. Ost-Afr. C.* 142. Bulb large, oblong. Leaves contemporary with the flowers, rigid, grey-green, narrowly linear, with a slightly involute margin and 5–7 prominent pilose ribs.

Peduncle 2–2½ times the length of the leaves, shortly pilose. Raceme dense, many-flowered, broadly conical; pedicels slender, 1½ times longer than the perianth; bracts lanceolate. Perianth segments oblong, white, 1-nerved. Stamens as long as the perianth; anthers oblong.

Mozamb. Dist. Portuguese East Africa: Beira, *Braga!*

No specimen at Kew.

13. **U. indica,** *Kunth, Enum.* iv. 333. Bulb globose, 2–3 in. diam. Leaves developed after the flowers, linear, glabrous, ½–1 ft. long. Peduncle fragile, slender, 1–2 ft. long. Raceme very lax, ½–1 ft. long; pedicels ascending, the lower finally 1–2 in. long; bracts minute, deltoid, evanescent. Perianth funnel-shaped, ⅓–½ in. long; segments oblanceolate-oblong, obtuse, whitish, with a 2–3-nerved brownish-green keel. Stamens shorter than the perianth; anthers linear-oblong, ⅛ in. long; filaments slightly flattened, ¼ in. long. Capsule oblong, subacute, ½–¾ in. long.—Wight, Ic. t. 2063; Baker in Journ. Linn. Soc. xiii. 222; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 76, 111. *U. senegalensis,* Kunth, Enum. iv. 334.

Upper Guinea. Senegambia: near Richard-Tol, *Lelievre.* Sierre Leone: Wallia, *Scott-Elliot,* 4572! Durunia, *Scott-Elliot,* 4817! Lomaburn, *Scott-Elliot,* 5019! and without precise locality, *Morson!* Niger Territory: Nupe, *Barter,* 1099! Dagoumba; Salaga, *Krause,* 41!

Nile Land. Eritrea: near Dessi, *Schweinfurth & Riva,* 1779; and near Saati, 1000 ft., *Schweinfurth & Riva,* 50. British East Africa: Ghazal River, at Meshra. *Schweinfurth,* 1262! 1279!

Also in India.

14. **U. zambesiaca,** *Baker in Journ. Linn. Soc.* xiii. 223. Bulb ovoid, 2 in. diam. Leaves narrowly linear, glabrous, not contemporary with the flowers. Peduncle moderately stout, 2 ft. or more long. Raceme very lax, above 1 ft. long; pedicels ascending, the lower ¾–1 in. long; bracts minute, deltoid, fugacious. Perianth funnel-shaped, ½ in. long; segments oblanceolate-oblong, whitish, with a 2–3-nerved greenish-brown keel. Stamens shorter than the perianth; anthers small, oblong; filaments linear. Capsule globose, ⅓ in. diam.

Mozamb. Dist. Portuguese East Africa: Lower Zambesi; near Expedition Island, *Kirk,* 128!

15. **U. petitiana,** *Solms in Schweinf. Beitr. Fl. Æthiop.* 294. Bulb subglobose, 1–1½ in. diam. Leaves linear, glabrous, not contemporary with the flowers. Peduncle moderately stout, stiffly erect, 2 ft. long. Raceme cylindrical, dense in the upper half, ½ ft. long; pedicels very short, ascending; bracts linear-subulate, not spurred, ¼–⅓ in. long. Perianth ⅙–⅕ in. long; segments white, with a 2–3-nerved greenish-brown keel. Stamens nearly as long as the perianth; anthers small, oblong; filaments linear. Style not exserted.—*Scilla petitiana,* A. Rich. Tent. Fl. Abyss. ii. 328.

Nile Land. Galabat: Matamma, *Schweinfurth,* 21! Abyssinia: mountains of Shoa, *Petit.*

16. **U. tayloriana,** *Rendle in Journ. Linn. Soc.* xxx. 424. Bulb large, globose. Leaves 7, contemporary with the flowers, rigid, linear-subulate from a sheathing base, 7–8 in. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad. Peduncle under 1 ft. long. Raceme 3 in. long, dense upwards; pedicels $\frac{1}{6}$–$\frac{1}{5}$ in. long; bracts subulate from a triangular base, not spurred; lower $\frac{1}{2}$ in. long. Perianth $\frac{1}{4}$ in. long; segments oblong-spathulate, white, with a 3-nerved red keel. Anthers small, oblong; filaments flattened, $\frac{1}{6}$ in. long. Capsule globose, nearly $\frac{1}{4}$ in. long.

Mozamb. Dist. German East Africa: between the coast and Uyui, *Taylor*.

No specimen at Kew.

17. **U. angolensis,** *Baker in Journ. Bot.* 1874, 364. Bulb globose, 1–1$\frac{1}{2}$ in. diam.; tunics membranous. Leaves 6–8, contemporary with the flowers, linear, glabrous, 1–2 ft. long, $\frac{1}{2}$–1 in. broad low down. Peduncle stiffly erect, 1–1$\frac{1}{2}$ ft. long. Raceme 4–6 in. long, dense upwards; pedicels erecto-patent; lower $\frac{1}{3}$–$\frac{1}{2}$ in. long; bracts subulate, not spurred, $\frac{1}{2}$–$\frac{3}{4}$ in. long, projecting beyond the buds. Perianth funnel-shaped, $\frac{1}{3}$ in. long; segments oblanceolate, obtuse, white, with a broad 5-nerved brown keel. Stamens rather shorter than the perianth; anthers small, oblong; filaments linear. Capsule depresso-globose, $\frac{3}{4}$ in. diam.—*U. chlorantha,* Welw. ex Baker in Trans. Linn. Soc. ser. 2, Bot. i. 248.

Lower Guinea. Angola: Loanda, Pungo Andongo and Golungo Alto, *Welwitsch,* 3810! 3812! Ambriz, *Monteiro!*

18. **U. comosa,** *Welw. ex Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 247. Bulb large, globose; tunics membranous. Leaves 6–8, contemporary with the flowers, ensiform, acuminate, glabrous, 2–3 ft. long, 1 in. broad low down, tapering gradually to the point. Peduncle stout, stiffly erect, 3 ft. and more long. Raceme moderately dense, cylindrical, 1–1$\frac{1}{2}$ ft. long; pedicels ascending; lower finally 1 in. long; bracts large, subulate, projecting beyond the buds. Perianth $\frac{1}{3}$ in. long; segments oblanceolate, obtuse, with a 5-nerved green or brown keel. Stamens rather shorter than the perianth; anthers small, oblong; filaments flattened. Capsule depresso-globose, $\frac{3}{4}$ in. diam.

Lower Guinea. Angola: Mossamedes and Huilla, in wooded pastures, *Welwitsch,* 3814! 3815!

19. **U. Beccarii,** *Baker in Journ. Linn. Soc.* xiii. 223. Bulb ovoid, 1$\frac{1}{2}$ in. diam. Leaves contemporary with the flowers, lanceolate, glabrous, 5–6 in. long, 1 in. broad low down. Peduncle about as long as the leaves. Raceme laxly 10–15-flowered, 5–6 in. long; pedicels $\frac{1}{3}$–$\frac{1}{2}$ in. long; bracts persistent, as long as the pedicels. Perianth $\frac{1}{2}$ in. long; segments oblong, whitish, with a many-nerved, obscure, green keel. Filaments slightly flattened, rather shorter than the perianth. Style straight, reaching to the tip of the perianth-segments.—Martelli, Fl. Bogos. 86.

Nile Land. Eritrea: Keren, 4000–4500 ft., *Beccari,* 121!

No specimen at Kew.

20. **U. nigritana,** *Baker in Journ. Linn. Soc.* xiii. 224. Bulb moderately large; outer tunics copiously fibrous at the apex. Leaves linear, glabrous, channelled down the face, 1–1½ ft. long. Peduncle stiffly erect, 1½–2 ft. long. Raceme lax, finally 1–1½ ft. long; upper pedicels short; lower finally 1–1½ in. long; bracts lanceolate, acuminate; lower ½–¾ in. long. Perianth ½–¾ in. long; segments linear-oblong, whitish, with a broad laxly 5-nerved red-brown keel. Stamens shorter than the perianth; anthers oblong, 1/12 in. long; filaments linear. Style reaching to the tips of the perianth. Capsule ovoid, shallowly lobed, ½–¾ in. long.

Upper Guinea. Sierra Leone: Falaba, on bare open spots, *Scott-Elliot,* 5171! and on the laterite plateau on the way to Sulimania, *Scott-Elliot,* 5289! interior of Western Lagos, *Rowland!* Niger Territory: Nupe; common in open places, between Ijayo and Ilorin, *Barter,* 3335! and at Jeba, on the River Niger, *Barter!*

Nile Land. British East Africa: Mittu; Dimido (Dimindu), *Schweinfurth,* 2796! Niamniam, at the River Boddo, *Schweinfurth,* ser. iii. 168! Uganda; Kampala, *Scott-Elliot,* 7337!

21. **U. acinacifolia,** *Schinz in Verhandl. Bot. Ver. Prov. Brandenb.* xxxi. 220. Bulb medium-sized, globose. Leaves 5–6, contemporary with the flowers, linear, glabrous, very acuminate, 1½–2 ft. long. Peduncle stiffly erect, 3 ft. long. Raceme lax, 1 ft. long; pedicels short, ascending; bracts linear-subulate, ½–1 in. long. Perianth 1 in. long; segments linear-oblong, whitish, with a broad laxly 5-nerved red-brown keel. Stamens rather shorter than the perianth; anthers oblong, 1/12 in. long; filaments linear. Style subulate, ½ in. long. Capsule ovoid, 1 in. long, not deeply lobed.

Lower Guinea. German South-west Africa: Amboland; at Oshando, *Schinz,* 24!

Imperfectly known species.

22. **U. quartiniana,** *Solms in Schweinf. Beitr. Fl. Æthiop.* 294. Bulb small, ovoid. Leaves linear, glabrous. Peduncle 6–8 in. long, slender. Raceme lax, 3–6-flowered; pedicels short; bracts linear, twice as long as the pedicels. Perianth ¼–⅓ in. long; segments oblong, cucullate at the apex, with very thin margins and a stouter middle. Filaments nearly as long as the perianth.—Baker in Journ. Linn. Soc. xiii. 223. *Scilla quartiniana,* A. Rich. Tent. Fl. Abyss. ii. 329.

Nile Land. Abyssinia: Shire, *Quartin-Dillon.*

No specimen at Kew.

25. **DRIMIOPSIS,** Lindl.; Benth. et Hook. f. Gen. Pl. iii. 813.

Perianth campanulate; segments subequal, ovate or oblong, without any distinct dorsal rib, cucullate at the apex, connate only at the very base. Stamens 6, shorter than the perianth, attached to the base of the segments; filaments very short, dilated; anthers ovoid, versatile. Ovary sessile, globose, 3-celled; ovules 2 in a cell, collateral; style short, subulate; stigma minute, capitate. Capsule globose, loculicidally 3-valved.

Seeds solitary, turgid; testa black; albumen fleshy; embryo cylindrical.—Rootstock a tunicated bulb. Leaves sessile or petiolate. Inflorescence dense, racemoso-spicate; upper flowers minute, abortive, as in *Muscari* and *Lachenalia;* bracts generally obsolete. Flowers small, white.

Species 10–12, the others South Africa.

Leaves narrowed to the base.
- Leaves 1 in. broad . . . . . 1. *D. Barteri.*
- Leaves 1½ in. broad . . . . . 2. *D. Kirkii.*
- Leaves 2 in. broad.
  - Leaves acute . . . . . 3. *D. botryoides.*
  - Leaves obtuse . . . . . 4. *D. Stuhlmanni.*
  - Leaves 3 in. broad . . . . . 5. *D. Volkensii.*

Leaves rounded at the base.
- Leaves oblong . . . . . 6. *D. Holstii.*
- Leaves orbicular . . . . . 7. *D. perfoliata.*

1. **D. Barteri,** *Baker in Saund. Ref. Bot.* iii. *App.* 18. Bulb globose, 1 in. diam. Leaves oblanceolate, 6–8 in. long, 1 in. broad above the middle, not distinctly petiolate, narrowed gradually to the clasping base. Peduncle 6–8 in. long. Raceme dense, subspicate, oblong-cylindrical, 1½–2½ in. long; bracts obsolete. Buds subglobose; perianth-segments oblong, ⅛ in. long. Stamens shorter than the perianth-segments; filaments deltoid.—Journ. Linn. Soc. xiii. 228.

Upper Guinea. Niger Territory: Nupe; in rocky places, *Barter,* 1512! and on the plains of Ilorin, *Barter,* 3445!

2. **D. Kirkii,** *Baker in Gard. Chron.* 1874, ii. 644. Bulb globose, 1½ in. diam.; outer tunics white, truncate. Leaves 6–8, lorate, 6–8 in. long, 1½ in. broad at the middle, narrowed gradually into a broad channelled petiole shorter than the blade, pale green, with copious irregular blotches of dark green. Peduncle 1–1½ ft. long. Raceme 3–6 in. long, lax in the lower half; pedicels very short; bracts obsolete. Perianth ⅙ in. long; segments oblong. Filaments lanceolate. Style $\frac{1}{12}$ in. long.—Bot. Mag. t. 6276.

Mozamb. Dist. Zanzibar: cultivated specimen, *Kirk!*

First flowered at Kew, October 1874.

3. **D. botryoides,** *Baker in Saund. Ref. Bot.* iii. *App.* 17. Bulb globose, 1½ in. diam. Leaves 7–8 to a bulb, oblong, ½ ft. long, 2 in. broad at the middle, narrowed gradually into a broad channelled petiole half as long as the blade, thick and fleshy in texture, mottled on the upper surface with blotches of dark green on a pale green ground. Peduncle terete, 1 ft. or more long. Raceme subspicate, 3–4 in. long; pedicels very short; bracts obsolete. Perianth ⅙ in. long; segments oblong; upper flowers minute, abortive. Filaments lanceolate, half as long as the perianth-segments.—Journ. Linn. Soc. xiii. 227.

Mozamb. Dist. Zanzibar, cultivated specimen, *Kirk!* East Africa: without locality, *Herb. Blackburn!*

Flowered at Kew, July 1873.

4. **D. Stuhlmanni,** *Baker.* Bulb not seen. Leaves several, contemporary with the flowers, sessile, oblong, 3–4 in. long, 2 in. broad at the middle, obtuse, clasping the base of the stem, membranous. Peduncle as long as the leaves. Spike dense, oblong, under 1 in. long. Perianth campanulate, greenish-white, $\frac{1}{8}$ in. long. Stamens and style very short.

Mozamb. Dist. German East Africa: Ukami; South-west Uluguru, 1200 ft., *Stuhlmann,* 9308 !

5. **D. Volkensii,** *Baker.* Bulb $1\frac{1}{2}$–2 in. diam. Leaves oblong, contemporary with the flowers, 6–9 in. long, 3 in. broad at the middle, acute, narrowed gradually to the sessile base, thick, fleshy, spotted with green all over the face. Peduncle nearly 1 ft. long. Raceme dense, cylindrical, 3–4 in. long; pedicels scarcely any. Perianth $\frac{1}{8}$ in. long; segments oblong, white with a green keel. Capsule the size of a small pea.—*Scilla Volkensii,* Engl. Pfl. Ost-Afr. C. 142.

Mozamb. Dist. German East Africa: Kilimanjaro; below Marangu, 3000 ft. *Volkens,* 2164!

6. **D. Holstii**, *Engl. Pfl. Ost-Afr. C.* 143. Leaves oblong from a broad base, acute. Peduncle 2–3 times the length of the leaves. Raceme dense, conic; pedicels very short. Buds globose; perianth-segments oblong, subacute. Stamens half as long as the perianth-segments; filaments triangular; anthers ovoid.

Mozamb. Dist. German East Africa: Usambara, 4000–4500 ft., *Holst.*

No specimen at Kew.

7. **D. perfoliata,** *Baker in Gard. Chron.* 1878, x. 364. Bulb globose, above 1 in. diam.; outer tunics greenish. Leaves 2, suborbicular, 2–$2\frac{1}{2}$ in. long, clasping the stem, with rounded imbricated basal lobes, spreading horizontally, glaucous green with copious blotches of bright green on the upper surface. Peduncle unspotted, $\frac{1}{2}$ ft. long. Raceme dense, subspicate, 1 in. long; upper flowers minute, abortive; bracts minute, lanceolate. Perianth greenish-white. Filaments lanceolate-deltoid. Style as long as the ovary.

Mozamb. Dist. Zanzibar, *Kirk !*

Described from a plant that flowered at Kew in the autumn of 1878.

26. **ORNITHOGALUM,** Linn.; Benth. et Hook. f. Gen. Plant. iii. 815.

Perianth polyphyllous; segments oblong, obtuse, subequal, spreading from the base, concolorous or furnished with a distinct 1-nerved keel. Stamens 6, hypogynous, shorter than the perianth; filaments often flattened; anthers oblong, dorsifixed, versatile. Ovary sessile, globose, 3-celled; ovules many, superposed; style subulate, as long as or longer than the ovary; stigma capitate, minute. Capsule loculicidally 3-valved, not deeply lobed. Seeds not compressed; testa black;

albumen firm; embryo small.—Rootstock a tunicated bulb. Leaves all radical, contemporary with the flowers. Raceme elongated or corymbose; pedicels not articulated; bracts membranous, persistent, not spurred. Flowers usually white.

Species 100. Temperate and subtemperate regions of the Old World, concentrated in South Africa, one doubtful species Chilian. All the Tropical African species belong to the section *Beryllis*, marked by its long narrow racemes and perianth-segment furnished with a distinct narrow green keel.

Bulbs large.
  Leaves 1½–2 ft. long.
    Bracts very large . . . . . 1. *O. longibracteatum.*
    Bracts smaller . . . . . 2. *O. caudatum.*
  Leaves ½ ft. long . . . . . 3. *O. Stapffii.*
Bulbs small.
  Peduncle 1–2 ft. long.
    Leaves ¼–⅓ in. broad . . . . . 4. *O. sordidum.*
    Leaves ½–¾ in. broad . . . . . 5. *O. Eckloni.*
    Leaves 1–1½ in. broad . . . . . 6. *O. cepæfolium.*
  Peduncle 6–9 in. long.
    Pedicels erecto-patent . . . . . 7. *O. benguellense.*
    Pedicels cernuous.
      Raceme long . . . . . 8. *O. cernuum.*
      Raceme short . . . . . 9. *O. gambosanum.*
  Peduncle short.
    Leaves straight . . . . . 10. *O. amboense.*
    Leaves circinate at the tip . . . . . 11. *O. spirale.*

1. **O. longibracteatum,** *Jacq. Hort. Vind.* iii. *t.* 29. Bulb ovoid, 3–4 in. diam. Leaves 5–6, lanceolate, flaccid, 1½–2 ft. long, 1–1½ in. broad low down. Peduncle stout, stiffly erect, as long as the leaves. Raceme dense in the upper half, 1 ft. or more long; pedicels ascending or spreading, the lower 1 in. long; bracts very long, subulate from a lanceolate base, protruding beyond the buds. Perianth ½ in. long; segments linear-oblong, whitish, with a broad green keel. Stamens shorter than the perianth; filaments linear.—Red. Lil. t. 120; Baker in Journ. Linn. Soc. xiii. 277, and Fl. Cap. vi. 514. *O. pulchrum*, Schinz in Verh. Bot. Ver. Prov. Branden. xxxi. 221.

Nile Land. British East Africa: Ukamba; Kitui, *Hildebrandt*, 2646!

Lower Guinea. German South-west Africa: Amboland; Ondonga district at Okasima-ka-Namutenya, *Schinz*, 19!

Also in South Africa.

2. **O. caudatum,** *Ait. Hort. Kew*, i. 442. Bulb globose, 1½–2 in. diam. Leaves ensiform, flaccid, glabrous, 1½–2 ft. long, 1–1½ in. broad low down. Peduncle long, moderately stout, stiffly erect, 1½–3 ft. long. Raceme moderately dense, ½–1 ft. long; pedicels ascending or patent, the lower ½–¾ in. long; bracts subulate from a lanceolate base, the lower 1 in. long. Perianth ⅓–½ in. long; segments oblong, white, with a distinct green keel. Stamens shorter than the perianth; filaments flattened. Capsule globose.—Jacq. Ic. t. 423; Bot. Mag. t. 805; Baker in Journ. Linn. Soc. xiii. 276, and Fl. Cap. vi. 515.

Nile Land. British Somaliland: Ahl Mountains, 5200 ft., *Hildebrandt*, 1467!

Lower Guinea. Lower Congo, *Laurent.*

Mozamb. Dist. German East Africa: Usambara; Amboni, *Holst*, 2439! Wuga, *Buchwald*, 228! and Kilimanjaro, Rombo Distr., 4500–5000 ft., *Volkens*, 387!

Also in South Africa.

3. **O. Stapffii,** *Schinz in Bull. Herb. Boiss.* iv. *App.* iii. 42. Bulb ovoid, 2–3 in. diam. Leaves lanceolate, 5–6 in. long, $\frac{1}{2}$ in. broad. Raceme many-flowered, 2 in. long; lower pedicel $\frac{1}{5}$ in. long. Perianth white, $\frac{1}{4}$–$\frac{1}{3}$ in. long; segments oblong. Filaments suddenly dilated near the base.

Lower Guinea. German South-west Africa: Hereroland; at Namib, near the Hope Mine, *Stapff*, 28, and without precise locality, *Belck*, 64.

No specimen at Kew.

4. **O. sordidum,** *Baker in Kew Bulletin*, 1895, 228. Bulb not seen. Leaves about 6, linear, 1–1$\frac{1}{2}$ ft. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad at the middle. Peduncles moderately stout, 1$\frac{1}{2}$–2 ft. long. Raceme cylindrical, 4–6 in. long, lax in the lower part; pedicels very short, ascending; bracts linear, $\frac{1}{4}$–$\frac{1}{3}$ in. long, projecting beyond the buds. Perianth campanulate, $\frac{1}{4}$ in. long; segments oblong, whitish, with a broad green keel. Stamens rather shorter than the perianth; filaments linear. Style as long as the oblong ovary.

Nile Land. British Somaliland; Golis range; Woob, *Miss Edith Cole!*

5. **O. Eckloni,** *Schlecht. in Linnæa*, xxv. 177. Bulb globose, 1–2 in. diam. Leaves 4–6, linear, erect, glabrous, 1–2 ft. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad low down. Peduncle moderately stout, 1$\frac{1}{2}$–2 ft. long. Raceme dense or moderately dense, 3–4 in. long; pedicels short, ascending; bracts linear-subulate, the lower $\frac{1}{3}$–$\frac{1}{2}$ in. long. Perianth $\frac{1}{4}$ in. long; segments oblong, white with a distinct green keel. Stamens rather shorter than the perianth; filaments uniform, linear. Capsule globose, $\frac{1}{4}$ in. diam.—Baker in Journ. Linn. Soc. xiii. 276, and Fl. Cap. vi. 513; Engl. Hochgebirgsfl. Trop. Afr. 168.

Nile Land. British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 1841! Kikuyu, *Taylor.* Somaliland; near Maid, 5000 ft., *Hildebrandt*, 1467.

Lower Guinea. Angola: Malange, *Mechow*, 882!

Mozamb. Dist. German East Africa: Unyamwezi; near Tabora, *Speke & Grant!* British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 197! Mount Mlanje, *Whyte! Scott-Elliot*, 8685!

Also in South Africa.

6. **O. cepæfolium,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 248. Bulb globose, 1$\frac{1}{2}$–2 in. diam. Leaves 4–5, ensiform, glabrous, acuminate, 1–1$\frac{1}{2}$ ft. long, 1–1$\frac{1}{2}$ in. broad low down. Peduncle moderately stout, 1–2 ft. long. Raceme dense, 2–3 in. long; pedicels very short, ascending; bracts lanceolate-subulate, the lower $\frac{1}{4}$–$\frac{1}{3}$ in. long. Perianth campanulate, $\frac{1}{4}$ in. long; segments oblong, white with a broad red-brown

keel. Stamens rather shorter than the perianth; filaments linear. Style reaching to the top of the perianth. Capsule subglobose, $\frac{1}{4}$ in. long.

Lower Guinea. Angola: Pungo Andongo and Huilla, *Welwitsch*, 3816!

7. **O. benguellense,** *Baker in Trans. Linn. Soc. ser. 2, Bot.* i. 248. Bulb subglobose, under 1 in. diam. Leaves 2–3, subterete, erect, fleshy, glabrous, $\frac{1}{2}$ ft. long, $\frac{1}{12}$ in. diam. Peduncle slender, 6–9 in. long. Raceme lax, subcylindrical, subsecund, 3–4 in. long; pedicels short, erecto-patent; bracts minute, deltoid, the lower spurred. Perianth $\frac{1}{6}$ in. long; segments white, with a distinct red-brown keel. Stamens rather shorter than the perianth; filaments linear. Capsule small, oblong.—Engl. Hochgebirgsfl. Trop. Afr. 168.

Lower Guinea. Angola: Huilla, 3800-5500 ft., *Welwitsch*, 3766!

8. **O. cernuum,** *Baker.* Bulb not seen. Leaves narrowly linear, firm, glabrous, 1 ft. or more long, $\frac{1}{6}$ in. broad at the middle, with a distinct midrib. Peduncle 6–9 in. long. Raceme very lax, $\frac{1}{2}$–1 ft. long; pedicels cernuous, the lower $\frac{1}{2}$ in. long; bracts small, lanceolate. Perianth $\frac{1}{4}$ in. long; segments oblong, white with a distinct green keel. Stamens shorter than the perianth; filaments linear.

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan*, 1337!

9. **O. gambosanum,** *Baker.* Bulb small. Leaves 4, erect, linear, 8–9 in. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad low down, tapering to the point, clasping the base of the stem, moderately firm, glabrous. Peduncle slender, erect, 5–6 in. long. Raceme moderately dense, oblong-cylindrical, 2 in. long; bracts linear, acuminate, protruding beyond the buds; pedicels short, the lower spreading or cernuous, $\frac{1}{6}$ in. long. Perianth campanulate, $\frac{1}{6}$ in. long; segments oblanceolate, obtuse, white with a pale brown keel. Stamens nearly as long as the perianth; anthers small, oblong; filaments rather flattened. Style longer than the globose ovary.

Lower Guinea. Angola: Gambos, *Newton!*

No specimen at Kew.

10. **O. amboense,** *Schinz in Verh. Bot. Ver. Prov. Branden.* xxxi. 220. Bulb globose, 1 in. diam. Leaves 3–4, subterete, erect, moderately firm, glabrous, channelled down the face, 3–10 in. long, with a long sheathing base. Peduncle slender, 2–3 in. long. Raceme moderately dense, 1–2 in. long; pedicels very short, ascending; bracts lanceolate, the lower $\frac{1}{3}$–$\frac{1}{2}$ in. long. Perianth $\frac{1}{3}$–$\frac{1}{2}$ in. long; segments oblong-lanceolate, white, with a distinct green keel. Stamens shorter than the perianth; filaments filiform.

Lower Guinea. German South-west Africa: Amboland; between Olukonda and Omandongo, *Schinz*, 31! 37!

11. **O. spirale,** *Schinz in Bull. Herb. Boiss.* iv. *App.* iii. 42. Bulb ovoid-oblong, above 1 in. diam. Leaves linear-lanceolate, channelled down the face, 8 in. long, $\frac{1}{5}$ in. broad, circinate at the apex. Peduncle rigid, 4–5 in. long. Raceme lax, 20-flowered; pedicels patent, $\frac{1}{2}$ in.

long; bracts scarious, acuminate. Perianth $\frac{1}{3}$–$\frac{1}{4}$ in. long; segments $\frac{1}{12}$–$\frac{1}{8}$ in. broad, yellow, 3–4-nerved. Filaments dilated at the base.

Lower Guinea. German South-west Africa: Great Namaqualand; Rehoboth, *Fleck*, 890.

No specimen at Kew.

27. **SCILLA,** Linn.; Benth. et Hook. f. Gen. Pl. iii. 814.

Perianth polyphyllous; segments subequal, oblong or linear-oblong, 1-nerved in the keel, spreading from the base or above it. Stamens 6, not longer than the perianth, attached to the base of the segments; filaments filiform; anthers oblong, versatile. Ovary globose or oblong, 3-celled, sessile or stipitate; ovules many, superposed, or 2 collateral; style subulate; stigma minute, capitate. Capsule loculicidally 3-valved. Seeds turgid; testa black or brown-black; albumen fleshy; embryo straight, cylindrical.—Rootstock a tunicated bulb. Leaves all basal, contemporary with the flowers. Inflorescence racemose; pedicels not articulated; bracts scariose, persistent. Flowers blue varying to white, mauve-purple or greenish.

Species 100, spread throughout Europe, Asia, and Africa; many in South Africa.

*EUSCILLA. Perianth-segments spreading from the base.

Leaves subcoriaceous, finely veined . . . . 1. *S. setifera.*
Leaves rigid, strongly veined . . . . . 2. *S. rigidifolia.*
Leaves fleshy, finely veined . . . . . 3. *S. Berthelotii.*

**LEDEBOURIA. Perianth-segments spreading from above the base.

† Perianth $\frac{1}{12}$–$\frac{1}{6}$ in. long, campanulate.
Flowers mauve-purple.
Inflorescence spicate . . . . . 4. *S. spicata.*
Inflorescence racemose.
Bulb small.
Leaves lorate . . . . . 5. *S. oubanghiensis.*
Leaves linear.
Leaves 2–3 in. long.
Perianth $\frac{1}{12}$ in. long . . . . 6. *S. arenaria.*
Perianth $\frac{1}{8}$ in. long . . . . 7. *S. edulis.*
Leaves 4–6 in. long . . . . . 8. *S. benguellensis.*
Leaves subterete . . . . . 9. *S. polyphylla.*
Bulb large . . . . . 10. *S. indica.*
Flowers green.
Leaves linear.
Leaves 2–3 in. long . . . . . 11. *S. Schweinfurthii.*
Leaves 6–7 in. long . . . . . 12. *S. gabunensis.*
Leaves lanceolate.
Peduncle short.
Raceme very lax . . . . . 13. *S. laxiflora.*
Raceme rather lax . . . . . 14. *S. Simiarum.*
Raceme dense . . . . . 15. *S. maesta.*
Peduncle $\frac{1}{2}$–1 ft. or more long.
Peduncle shorter than the leaves.

Raceme 2 in. long . . . . . 16. *S. Buchanani.*
Raceme 4–6 in. long . . . . . 17. *S. pallidiflora.*
Peduncle as long as the leaves . . . 18. *S. flaccidula.*
Peduncle rather longer than the leaves . . 19. *S. Petersii.*
Peduncle much longer than the leaves . . 20. *S. Fischeri.*
Leaves lorate.
Raceme long, lax . . . . . 21. *S. camerooniana.*
Raceme short, dense . . . . . 22. *S. Dybowskii.*
Leaves oblong or oblong-lanceolate.
Leaves 2.
Pedicels $\frac{1}{8}$–$\frac{1}{6}$ in. long.
Bulb $\frac{1}{2}$ in. diam. . . . . 23. *S. zambesiaca.*
Bulb 1–1$\frac{1}{2}$ in. diam. . . . . 24. *S. modesta.*
Pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long . . . . . 25. *S. richardiana.*
Leaves 3–4.
Peduncle shorter than the leaves . . . 26. *S. chlorantha*
Peduncle as long as the leaves . . . 27. *S. platyphylla.*
Leaves ovate . . . . . 28. *S. uyuiensis.*
Leaves cordate-ovate . . . . . 29. *S. cordifolia.*
†† Perianth $\frac{1}{6}$–$\frac{1}{4}$ in. long.
Perianth more or less tinged with mauve-purple.
Bulb small
Leaves oblong-lanceolate . . . . 30. *S. tayloriana.*
Leaves ovate or oblong . . . . 31. *S. Hildebrandtii.*
Bulb medium-sized.
Peduncle 4–6 in. long . . . . 32. *S. lilacina.*
Peduncle 8–9 in. long . . . . 33. *S. Johnstoni.*
Bulb large . . . . . 34. *S. lanceæfolia.*
Perianth green.
Leaves lanceolate.
Bulb small . . . . . 35. *S. Ledieni.*
Bulb large.
Perianth $\frac{1}{6}$ in. long . . . . 36. *S. congesta.*
Perianth $\frac{1}{5}$–$\frac{1}{4}$ in. long . . . . 37. *S. somaliensis.*
Leaves oblong . . . . . 38. *S. Kirkii.*
Leaves broadly ovate . . . . . 39. *S. textilis.*

1. **S. setifera,** *Baker*. Bulb globose, 1$\frac{1}{2}$ in. diam., crowned with a dense ring of bristles. Leaves several to a bulb, erect, sessile, linear, 8–9 in. long, $\frac{1}{4}$–$\frac{1}{2}$ in. broad, tapering gradually to a long point, subcoriaceous, glabrous, finely veined. Peduncle slender, glabrous, as long as the leaves. Raceme dense, cylindrical, 3–4 in. long; pedicels ascending, $\frac{1}{8}$–$\frac{1}{4}$ in. long; bracts linear, as long as the pedicels. Perianth campanulate, $\frac{1}{8}$ in. long; segments oblong, white, with an obscure brown keel, spreading from the base. Stamens nearly as long as the perianth; anthers oblong, minute. Ovary globose, sessile.

Nile Land. German East Africa: Karagwe; Ihangiro, *Stuhlmann*, 911A!

No specimen at Kew.

2. **S. rigidifolia,** *Kunth, Enum.* iv. 330. Bulb ovoid, 2–3 in. diam.; tunics bright brown, rigid. Leaves 5–6, lanceolate, sessile, erect, $\frac{1}{2}$–1 ft. long, 1 in. broad low down, rigidly coriaceous, with thick stramineous ribs and edges. Peduncle about as long as the leaves. Raceme

dense, oblong, 3–6 in. long, 1 in. diam.; rhachis thick, rugose; pedicels $\frac{1}{4}$–$\frac{1}{2}$ in. long; bracts linear. Perianth whitish, $\frac{1}{8}$ in. long; segments linear-oblong, spreading from the base. Stamens as long as the perianth; filaments linear. Style as long as the globose ovary; ovules 5–6 in a cell, superposed.—Baker in Journ. Linn. Soc. xiii. 242. *S. hispidula*, Baker in Trans. Linn. Soc. ser. 2, Bot. i. 248, and Fl. Cap. vi. 481; Engl. Hochgebirgsfl. Trop. Afr. 167.

Lower Guinea. Angola: Huilla; in open bushy places near Lopollo, 3800–5500 ft., *Welwitsch*, 3830!

Mozamb. Dist. German East Africa: on the higher plateau, North of Lake Nyasa, *Thomson!* between Lake Tanganyika and Lake Nyasa, 6000–8000 ft., *Thomson!* Urundi, common on bare hills, *Scott-Elliot*, 8311!

Also widely spread in South Africa.

3. **S. Berthelotii,** *Webb, Phyt. Canar.* iii. 337, *t.* 232. Bulb ovoid, $\frac{1}{2}$–$\frac{3}{4}$ in. diam. Leaves 5–6, spreading, lanceolate, sessile, $\frac{1}{2}$–1 ft. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad at the middle, narrowed gradually to the base. Peduncle slender, 6–8 in. long. Raceme 1–2 in. long, 12–20-flowered; pedicels short; bracts linear-subulate, minute. Perianth campanulate, $\frac{1}{12}$ in. long, pale lilac or white; segments oblong, spreading from the base. Stamens rather shorter than the perianth. Ovary globose; style subulate, as long as the ovary; ovules 2 in a cell, collateral.—Hook. fil. in Bot. Mag. t. 5308; Baker in Journ. Linn. Soc. xiii. 236.

Upper Guinea. Cultivated specimen from a bulb sent to Kew from West Africa by *Barter!*

Also in the Canaries.

4. **S. spicata,** *Baker in Journ. Bot.* 1878, 323. Bulb ovoid, 1 in. diam. Leaves 2, erect, lanceolate, acute, 2–5 in. long, $\frac{1}{2}$ in. broad below the middle. Peduncle 4–6 in. long. Flowers in a dense spike 1–2 in. long, $\frac{1}{4}$–$\frac{1}{3}$ in. diam.; bracts and pedicels obsolete. Perianth campanulate, bright purple, $\frac{1}{12}$ in. long. Stamens rather shorter than the perianth; filaments very short.

Nile Land. British East Africa: Jur; east of the River Wau, *Schweinfurth*, 1641! by the River Wau, *Schweinfurth*, 1652!

5. **S. oubanghiensis,** *Hua, Contr. Fl. Congo Franç. Lil.* 25. Bulb ovoid, 1 in. diam.; tunics blackish. Leaves 3–4, lorate, reaching a length of 6 in., above $\frac{1}{2}$ in. broad, narrowed to the base, obtuse, with a minute cusp. Peduncle with raceme as long as the leaves. Raceme lax, 25–30-flowered, 2–3 in. long; bracts very minute; pedicels patent, $\frac{1}{6}$–$\frac{1}{4}$ in. long. Perianth purple or greenish, $\frac{1}{8}$ in. long. Stamens as long as the perianth. Style short.

Lower Guinea. French Congo: River Ogowe at Bangue, on rocks at the rapids of Oubanghi, *Dybowski!*

No specimen at Kew.

6. **S. arenaria,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 249. Bulb ovoid, $\frac{1}{2}$–$\frac{3}{4}$ in. diam. Leaves 3–6, linear, erect, narrowed to

the base, 2 in. long, $\frac{1}{8}$ in. broad. Peduncle slender, erect, 3 in. long. Raceme lax, oblong, 1 in. long; pedicels $\frac{1}{8}$–$\frac{1}{6}$ in. long, lower cernuous; bracts minute, deltoid. Perianth campanulate, purple, $\frac{1}{12}$ in. long; segments oblong, reflexed from below the middle. Stamens as long as the perianth; filaments bright purple.

Lower Guinea. Angola: Pungo Andongo, in sandy wooded pastures, *Welwitsch*, 3823!

7. **S. edulis**, *Engl. Jahrb.* xv. 475. Bulb globose, $\frac{1}{2}$–$\frac{3}{4}$ in. diam. Leaves 4–6, erect, sessile, linear, $1\frac{1}{2}$–3 in. long, $\frac{1}{12}$–$\frac{1}{8}$ in. broad at the middle, narrowed gradually to the apex and base. Peduncle very slender, 2–3 in. long. Raceme moderately dense, oblong, cylindrical, $1\frac{1}{2}$–2 in. long; lower pedicels $\frac{1}{12}$–$\frac{1}{8}$ in. long; bracts minute. Perianth campanulate, mauve-purple, $\frac{1}{8}$ in. long; segments linear-oblong. Stamens nearly as long as the perianth; filaments mauve-purple.

Nile Land. British East Africa: Jur; Jur Ghattas, *Schweinfurth*, ser. iii., 159! Uganda: in grassy places on the shore of Lake Nyasa, *Wilson*, 31!

8. **S. benguellensis,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 249. Bulb globose, 1–2 in. diam. Leaves 2–6, sessile, linear, suberect, 4–6 in. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad at the middle, narrowed to both ends. Peduncle flexuose, 2–3 in. long. Raceme dense, oblong, 1–$1\frac{1}{2}$ in. long; pedicels $\frac{1}{6}$–$\frac{1}{4}$ in. long, lower cernuous; bracts deltoid, minute. Perianth campanulate, $\frac{1}{8}$ in. long; segments oblong, purple with a green keel. Stamens as long as the perianth.—Engl. Hochgebirgsfl. Trop. Afr. 167.

Lower Guinea. Angola; Huilla, in dry pastures near Lopollo, 3800–5500 ft., *Welwitsch*, 3831!

9. **S. polyphylla,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 249. Bulb globose, 1 in. diam. Leaves 10–12, subterete, erect, 3 in. long, scarcely $\frac{1}{12}$ in. diam. Peduncle as long as the leaves. Raceme lax. few-flowered, $\frac{1}{2}$ in. long; pedicels as long as the perianth; bracts minute, deltoid. Perianth purple, $\frac{1}{8}$ in. long; segments reflexed from below the middle. Stamens as long as the perianth.

Lower Guinea. Angola: Pungo Andongo and Golungo Alto, *Welwitsch*, 3832! 3833!

10. **S. indica,** *Baker in Saund. Ref. Bot.* iii. *App.* 12. Bulb globose, $1\frac{1}{2}$–2 in. diam. Leaves 5–6, erect, lanceolate, sessile, $\frac{1}{2}$ ft. long, clasping the base of peduncle. Peduncle about as long as the leaves. Raceme lax, oblong-cylindrical, 3–4 in. long; pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long, the lower cernuous; bracts minute. Perianth campanulate, greenish-purple, $\frac{1}{8}$ in. long; segments linear-oblong, spreading from the middle. Stamens rather shorter than the perianth; filaments purple.—Baker in Journ. Linn. Soc. xiii. 250. *Ledebouria hyacinthina*, Roth ex Wight, Ic. t. 2040.

Nile Land. Galabat: near Matamma, *Schweinfurth*, 13!

Mozamb. Dist. British Central Africa: in woods between Blantyre and Matope, *Scott!*

Also in Peninsular India and Ceylon.

11. **S. Schweinfurthii,** *Engl. Jahrb.* xv. 475. Bulb globose, $\frac{1}{2}$–$\frac{3}{4}$ in. diam. Leaves 3–6, erect, sessile, linear, 2–3 in. long, $\frac{1}{6}$–$\frac{1}{4}$ in. broad, narrowed gradually from the middle to the base. Peduncle slender, 2–3 in. long. Raceme lax, oblong, 1–1$\frac{1}{2}$ in. long; lower flowers cernuous; central pedicels $\frac{1}{6}$ in. long; bracts minute. Perianth campanulate, green, $\frac{1}{6}$ in. long; segments linear-oblong. Stamens shorter than the perianth; filaments pale.

Nile Land. British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 1898!

12. **S. gabunensis,** *Baker in Engl. Jahrb.* xv. 476. Bulb oblong, about $\frac{1}{2}$ in. diam. Leaves linear, 6–7 in. long, $\frac{1}{3}$ in. broad, Peduncle as long as the leaves. Raceme moderately dense, oblong, 1$\frac{1}{2}$ in. long; pedicels very short; bracts broad, minute. Perianth greenish, $\frac{1}{10}$ in. long; segments oblong. Stamens as long as the perianth; filaments pale.

Lower Guinea. Gaboon: Munda; near Sibange Farm, *Büttner*, 533!

No specimen at Kew.

13. **S. laxiflora**, *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 250. Bulb globose, 1–1$\frac{1}{4}$ in. diam. Leaves 3–4, oblanceolate, 4–5 in. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad above the middle, narrowed gradually to the base. Peduncle as long as the leaves. Raceme cylindrical, very lax, 4–5 in. long; central pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long; lower cernuous; bracts minute, deltoid. Perianth campanulate, green, $\frac{1}{12}$ in. long; segments linear-oblong, spreading from below the middle. Stamens as long as the perianth.

Lower Guinea. Angola: Loanda, on grassy hills, *Welwitsch!*

No specimen at Kew.

14. **S. Simiarum,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 249. Bulb ovoid $\frac{3}{4}$–1 in. diam. Leaves 3–4, spreading, sessile, lanceolate, 3–4 in. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad above the base, glaucous green, spotted with purple towards the base. Peduncle 2–3 in. long. Raceme oblong, rather lax, 1–1$\frac{1}{4}$ in. long; pedicels mostly cernuous, $\frac{1}{8}$–$\frac{1}{6}$ in. long; bracts minute, deltoid. Perianth campanulate, $\frac{1}{12}$ in. long, green, slightly tinged with purple; segments linear-oblong. Stamens as long as the perianth; filaments purple.

Lower Guinea. Angola: Pungo Andongo and Loanda, in inundated sandy places, *Welwitsch*, 3821! 3822! French Congo: River Ogowe at Bangue, on rocks at the rapids of Oubanghi, *Dybowski*, 531!

15. **S. maesta,** *Baker in Saund. Ref. Bot.* iii. *App.* 10. Bulb ovoid, 1–1$\frac{1}{2}$ in. diam. Leaves 5–6, erect, lanceolate, sessile, 4–6 in. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad, tapering gradually to the point, with a few purple spots. Peduncles 2–3 to a bulb, nearly as long as the leaves. Raceme dense,

1–2 in. long; lower pedicels cernuous, $\frac{1}{4}$–$\frac{1}{3}$ in. long; bracts minute. Perianth campanulate, green, $\frac{1}{8}$ in. long; segments linear-oblong, spreading from below the middle. Stamens rather shorter than the perianth.—Journ. Linn. Soc. xiii. 249.

Nile Land. British East Africa: at Tsavo, *Scott-Elliot*, 6500!

Mozamb. Dist. Portuguese East Africa: Zambesi Delta; Luabo River, *Kirk!* British Central Africa: Boruma, on the Zambesi, *Menyharth*, 1101! Fort Young, *Nicholson!*

16. **S. Buchanani,** *Baker in Gard. Chron.* 1893, xiii. 568. Bulb globose, 1 in. diam. Leaves 3, lanceolate, sessile, erect, unspotted, the largest 1 ft. long, under 1 in. broad. Peduncle green, flexuose, 6–8 in. long. Raceme dense, oblong, 2 in. long; pedicels spreading, $\frac{1}{4}$–$\frac{1}{2}$ in. long, the lower cernuous; bracts minute, lanceolate. Perianth oblong, green, $\frac{1}{6}$ in. long; segments linear-oblong, spreading from below the middle. Stamens rather shorter than the perianth.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 193!

Described from a plant that flowered at Kew in May 1893.

17. **S. pallidiflora,** *Engl. Jahrb.* xv. 476. Bulb ovoid, 1 in. diam. Leaves 2–4, lanceolate, obtuse, 10–14 in. long, about 1 in. broad. Peduncle 8–10 in. long. Raceme cylindrical, 4–6 in. long; pedicels as long as the flowers; bracts minute, ovate. Perianth campanulate, $\frac{1}{8}$ in. long; segments oblong, greenish. Stamens long as the perianth.

Nile Land. British East Africa: Jur; at Abu Guroon's Seriba, *Schweinfurth*, 1848, Agad Seriba, *Schweinfurth*, 1908.

No specimen at Kew.

18. **S. flaccidula,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 249. Bulb globose, $\frac{3}{4}$ in. diam. Leaves 2–4, flaccid, lanceolate, $\frac{1}{2}$–1 ft. long, 4–8 lin. broad. Peduncle weak, as long as the leaves. Raceme lax, oblong, finally 3–4 in. long; central pedicels $\frac{1}{6}$–$\frac{1}{4}$ in. long; bracts minute, deltoid. Perianth campanulate, greenish, $\frac{1}{8}$ in. long; segments linear-oblong, spreading from below the middle. Stamens as long as the perianth; filaments pale.

Lower Guinea. Angola: Pungo Andongo, *Welwitsch*, 3820!

19. **S. Petersii,** *Engl. Pfl. Ost-Afr. C.* 142. Leaves several, narrowly lanceolate. Peduncle slender, rather longer than the leaves. Raceme conical, 30-flowered; pedicels spreading, half as long again as the flowers. Perianth campanulate, $\frac{1}{10}$ in. long; segments green upwards, white with a purple centre towards the base. Filaments purple.

Mozamb. Dist. Portuguese East Africa: Lower Zambesi; at Tete, and at Beira, at the mouth of the River Pungue (ex *Engler*), collector not stated, probably *Peters*.

20. **S. Fischeri,** *Engl. Pfl. Ost.-Afr. C.* 142. Bulb large. Leaves lanceolate from a broad base, 3–4 in. long. Peduncle 1 ft. or

more long. Raceme cylindrical, 20–25-flowered; pedicels rather shorter than the flowers, spreading or slightly recurved. Perianth campanulate, greenish. Anthers yellow.

Mozamb. Dist. German East Africa, *Fischer*.

No specimen at Kew.

21. **S. camerooniana,** *Baker in Saund. Ref. Bot.* iii. *App.* 9. Bulb ovoid, $\frac{3}{4}$ in. diam. Leaves 3–4, erect, lorate, obtuse, minutely cuspidate, $\frac{1}{2}$ ft. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad at the middle, narrowed gradually into a long clasping petiole. Peduncle weak slender, 4–6 in. long. Raceme lax, $1\frac{1}{2}$–3 in. long, pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long; bracts minute. Perianth green, campanulate, $\frac{1}{8}$–$\frac{1}{6}$ in. long; segments linear-oblong. Stamens rather shorter than the perianth; filaments tinged with mauve purple.—Journ. Linn. Soc. xiii. 248.

Upper Guinea. Banks of the Cameroon River, *Mann,* 728! 2230! *Buchholz!*

Var. *maculata,* Hua, Contr. Fl. Congo Franç. Lil. 24. Leaves spotted. Flowers about 40 to a raceme.

Lower Guinea. French Congo: without precise locality, *Thollon!*

I cannot separate from this *S. edulis,* Hua, Contr. Fl. Congo Franç. Lil. 24, not Engl. (*S. utilis,* Hua, l.c. 25, under *S. oubanghiensis,* Hua), which is cultivated about Franceville and Brazzaville in French Congo, *Thollon,* 311! 886!

22. **S. Dybowskii,** *Hua, Contr. Fl. Congo Franç. Lil.* 25. Bulb globose, $1\frac{1}{2}$ in diam.; tunics brown. Leaves very unequal, lorate, 6–10 in. long, above 1 in. broad, acute or obtuse, spotted at the base. Peduncle scarcely $\frac{1}{2}$ ft. long. Raceme dense, oblong, 1–$1\frac{1}{2}$ in. long; bracts minute; pedicels $\frac{1}{8}$ in. long. Perianth campanulate, green, $\frac{1}{8}$ in. long. Stamens as long as the perianth; filaments purple. Ovary shortly stipitate; style short.

Lower Guinea. French Congo: near the Kemo River, a tributary of the Dua or Mobange River, *Dybowski,* 762!

No specimen at Kew. Very near *S. camerooniana.*

23. **S. zambesiaca,** *Baker in Saund. Ref. Bot.* iii. *App.* 8. Bulb globose, $\frac{1}{2}$ in. diam. Leaves usually 2, rarely 3, oblong or oblong-lanceolate, acute, 2–4 in. long, $\frac{3}{4}$–1 in. broad, with a long sheathing base. Peduncle slender, 2–3 in. long. Raceme lax, oblong-cylindrical, 2–4 in. long; pedicels $\frac{1}{8}$–$\frac{1}{6}$ in. long; bracts minute. Perianth green, campanulate, $\frac{1}{6}$ in. long; segments linear-oblong. Stamens rather shorter than the perianth; filaments pale.—Journ. Linn. Soc. xiii. 247.

Mozamb. Dist. Portuguese East Africa: Lower Zambesi, near Tete, *Kirk!* British Central Africa: Northern Zambesi; Boruma, under the shade of trees after the first rains, *Menyharth,* 1102! Nyasaland; Shire Highlands, *Buchanan,* 136!

24. **S. modesta,** *Baker.* Bulb globose, 1–$1\frac{1}{2}$ in. diam. Leaves 2, erect, sessile, oblong or lanceolate, acute, 2–6 in. long, $\frac{1}{2}$–1 in. broad at the middle, narrowed gradually to the base. Peduncle as long as the leaves. Raceme lax, oblong-cylindrical, 2–3 in. long; pedicels $\frac{1}{8}$–$\frac{1}{6}$ in. long; bracts minute. Perianth campanulate, green, $\frac{1}{8}$ in. long;

segments linear-oblong. Stamens rather shorter than the perianth; filaments pale.

Nile Land. British East Africa: Jur; at Wau Seriba, *Schweinfurth*, 1908!

25. **S. richardiana,** *Buching. ex Baker in Saund. Ref. Bot.* iii. *App.* 11. Bulb ovoid, $\frac{1}{2}$–$\frac{3}{4}$ in. diam. Leaves 2, suberect, oblong or oblong-lanceolate, 2–3 in. long, $\frac{1}{2}$–1 in. broad, with an entirely sheathing petiole. Peduncle 2–5 in. long. Raceme lax, oblong, $1\frac{1}{2}$–3 in. long; lower pedicels $\frac{1}{4}$–$\frac{1}{3}$ in. long; bracts minute. Perianth campanulate, $\frac{1}{6}$–$\frac{1}{3}$ in. long, green or slightly tinged with purple; segments oblong-lanceolate. Stamens nearly as long as the perianth.—Baker in Journ. Linn. Soc. xiii. 249; Engl. Hochgebirgsfl. Trop. Afr. 168; *Eratobotrys bifolia*, Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 326; *Drimia bifolia*, Schweinf. Beitr. Fl. Æthiop. 294, name only.

Nile Land. Abyssinia: Walcha Plateau, in the province of Sana, *Schimper*, 1622! Tigre; between Mai Gouagoua and Debra Sina, *Quartin-Dillon & Petit*, 46 (80)! Amba Sea, *Schimper*, 1855 (ex *Engler*), and without precise locality, *Schimper*, 572!

26. **S. chlorantha,** *Baker*. Bulb globose, $1\frac{1}{2}$ in. diam. Leaves 3, erect, oblong or oblong-lanceolate, acute, $\frac{1}{2}$ ft. long, 1–2 in. broad at the middle, narrowed gradually to an entirely clasping petiole. Peduncle 4 in. long. Raceme cylindrical, moderately dense, 3–5 in. long; pedicels spreading, $\frac{1}{8}$–$\frac{1}{6}$ in. long; bracts minute. Perianth campanulate, green, $\frac{1}{8}$ in. long; segments linear-oblong. Stamens rather shorter than the perianth; filaments green.

Nile Land. British East Africa: Jur; at Jur Ghattas, *Schweinfurth*, 1795! ser. iii. 162!

27. **S. platyphylla,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 250. Bulb large, subglobose. Leaves 4, erect, oblong, acute, $\frac{1}{2}$ ft. long, $1\frac{1}{2}$–2 in. broad at the middle, narrowed gradually to the sessile base. Peduncle moderately stout, as long as the leaves. Raceme dense, oblong, $1\frac{1}{2}$–2 in. long; pedicels all ascending, $\frac{1}{8}$–$\frac{1}{6}$ in. long; bracts minute, deltoid. Perianth campanulate, green, $\frac{1}{6}$ in. long; segments linear-oblong. Stamens rather shorter than the perianth.—Engl. Hochgebirgsfl. Trop. Afr. 167.

Lower Guinea. Angola: Huilla; among bushes on hills between Lopollo and Catumba, 3800–5500 ft., *Welwitsch*, 3826!

28. **S. uyuiensis,** *Rendle in Journ. Linn. Soc.* xxx. 428. Bulb rather large. Leaves 2, ovate from a short sheath, rather thick in texture, $1\frac{1}{2}$ in. long, 1 in. broad. Peduncle 3 in. long. Flowers about 20, in a short dense spike. Perianth campanulate, greenish, $\frac{1}{8}$ in. long. Filaments triangular, $\frac{1}{2}$ lin. long.

Mozamb. Dist. German East Africa: Unyamwezi; Uyui, *Taylor*.

No specimen at Kew.

29. **S. cordifolia,** *Baker*. Bulb not seen. Leaf thin, cordate-ovate, obtuse, $1\frac{1}{2}$–2 in. long; petiole entirely clasping the base of the

peduncle. Peduncle slender, 1½–2 in. long. Raceme moderately dense, oblong, 1½–2 in. long; pedicels cernuous, ⅛–⅙ in. long; bracts minute. Perianth campanulate, greenish, ⅙ in. long; segments linear-oblong. Stamens as long as the perianth; filaments pale. Style as long as the ovary.

Mozamb. Dist. British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 194!

30. **S. tayloriana,** *Rendle in Journ. Linn. Soc.* xxx. 426. Bulb ovoid, 1 in. diam. Leaves 3, very thin, oblong-lanceolate, acute, 6 in. long, 15–20 lin. broad, narrowed into a long sheathing petiole. Peduncle under a foot long. Raceme 5–11 in. long; pedicels longer than the flowers, the upper tinged with purple. Perianth campanulate, ⅓ in. long; segments ligulate, lilac-purple passing upwards into green. Filaments and style bright purple.

Mozamb. Dist. British East Africa: on the Rabai Hills, near Mombasa, *Taylor*.

No specimen at Kew.

31. **S. Hildebrandtii,** *Baker*. Bulb ovoid, under 1 in. diam.; outer tunics brown, membranous. Leaves 3, contemporary with the flowers, ovate or oblong, 3–4 in. long, 1–2 in. broad, rounded to a cuneate base, nearly sessile, very thin and membranous. Peduncle slender, as long as the leaves. Raceme very lax, 3 in. long; many lower flowers imperfect and deciduous; pedicels patent or erecto-patent, ¼–⅓ in. long; bracts minute. Perianth bright purple, ¼–⅓ in. long; segments linear-complicate from a lanceolate base. Stamens as long as the perianth; filaments bright purple; anthers minute, oblong, yellow. Capsule ⅙ in. diam., deeply emarginate at the apex.

Nile Land. British East Africa: Ukamba; Kitui, *Hildebrandt*, 2644!

32. **S. lilacina,** *Baker in Saund. Ref. Bot.* iii. *App.* 13. Bulb ovoid, 1½ in. diam. Leaves 6–8, thin, suberect, oblong-lanceolate, acute, 3–4 in. long, 1–1¼ in. broad at the middle, narrowed gradually into a channelled petiole as long as the blade. Peduncle 4–6 in. long. Raceme lax, cylindrical, 3–5 in. long; pedicels ¼–⅓ in. long; bracts minute. Perianth tubuloso-campanulate, pale purple, ¼ in. long; segments ligulate. Stamens nearly as long as the perianth; filaments bright mauve-purple.—*Eratobotrys lilacina*, Fenzl ex Kunth, Enum. iv. 679. *Drimia lilacina*, Schweinf. Beitr. Fl. Æthiop. 294.

Nile Land. Kordofan, *Kotschy*, 391! *Pfund*, 299!

33. **S. Johnstoni,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* ii. 351. Bulb globose, 1½ in. diam. Leaves ovate or oblong, shortly petiolate, obscurely cuspidate, 4–5 in. long by half as broad. Peduncles 4 to a bulb, 8–9 in. long. Racemes moderately dense, 5–6 in. long; central pedicels ⅓–½ in. long; bracts minute, ovate. Perianth cylindrical, green upwards, mauve-purple in the lower half; segments linear,

reflexing in the upper half. Stamens as long as the perianth. Style $\frac{1}{6}$ in. long.

Mozamb. Dist. British East Africa: Kilimanjaro expedition, 40–60 miles from the coast, *Johnston !*

34. **S. lanceæfolia,** *Baker in Saund. Ref. Bot. t.* 182. Bulb ovoid, $1\frac{1}{2}$–2 in. diam. Leaves 4–8, subpatent, sessile, oblong or oblong-lanceolate, acute, 4–6 in. long, pale green spotted with darker green. Peduncle curved, 2–4 in. long. Raceme dense, oblong, 2–3 in. long; pedicels longer than the flowers; bracts minute. Perianth campanulate, purplish green, $\frac{1}{5}$–$\frac{1}{4}$ in. long; segments linear-oblong, spreading from below the middle. Stamens shorter than the perianth; filaments bright mauve-purple.—Journ. Linn. Soc. xiii. 251, and Fl. Cap. vi. 487. *Drimia lanceæfolia*, Gawl. in Bot. Mag. sub t. 1380. *Lachenalia lanceæfolia*, Jacq. Ic. t. 402; Bot. Mag. t. 643.

Lower Guinea. Angola: temperate region of Huilla, *Welwitsch*, 3828 ! 3829 ! Hereroland, *Luderitz*, 31 (ex *Schinz*).

Also widely spread in South Africa.

35. **S. Ledieni,** *Engl. in Gartenfl.* 1889, *t.* 1294. Bulb globose, 1 in. diam. Leaves 5–6, lanceolate, glaucous, $\frac{1}{2}$–1 ft. long, $\frac{1}{2}$–1 in. broad, rooting at the tip, spotted with green and near the base on the back with claret-brown. Peduncle spotted, $\frac{1}{2}$ ft. long. Raceme moderately dense, 3 in. long; pedicels very short; bracts minute, ovate. Perianth campanulate, greenish, $\frac{1}{4}$ in. long; segments linear from an ovate base, reflexing in the upper half. Stamens distinctly shorter than the perianth.

Lower Guinea. Southern bank of the River Congo, near Musumbi, on marshy plains, 600 ft. above the river, *Ledien*.

No specimen at Kew.

36. **S. congesta,** *Baker in Trans. Linn. Soc. ser.* 2, *Bot.* i. 250. Bulb globose, $1\frac{1}{2}$–2 in. diam. Leaves 3–4, sessile, lanceolate, acute, 3–6 in. long, 1–$1\frac{1}{4}$ in. broad near the base. Peduncle 3–4 in. long. Raceme subspicate, 2 in. long; lower pedicels $\frac{1}{12}$ in. long; bracts minute, deltoid. Perianth campanulate, green, $\frac{1}{3}$ in. long. Stamens as long as the perianth. Ovary sessile.—Engl. Hochgebirgsfl. Trop. Afr. 167.

Lower Guinea. Angola: Huilla; on hills near Lopollo, 3800–5500 ft., *Welwitsch !*

No specimen at Kew.

37. **S. somaliensis,** *Baker in Engl. Jahrb.* xv. 476. Bulb globose, 2 in. diam. Leaves lanceolate, $\frac{1}{2}$ ft. long, 1 in. broad. Peduncle rather longer than the leaves. Raceme oblong, moderately dense, 2 in. long; pedicels very short; bracts minute, ovate. Perianth greenish, $\frac{1}{5}$–$\frac{1}{4}$ in. long; segments linear-oblong. Stamens included; filaments pale.

Nile Land. Somaliland: Ahl mountains, near Maid, 3000 ft., *Hildebrandt*, 1470! between Dolo and Malsare, in stony bushy places, *Riva*, 1226 (803) !

No specimen at Kew.

38. **S. Kirkii,** *Baker in Journ. Linn. Soc.* xiii. 254. Bulb large. Leaves thin, oblong, acute, 6–8 in. long, 1½–2 in. broad at the middle, narrowed gradually into a long channelled petiole. Peduncle a foot long. Raceme lax, oblong, 5–6 in. long; central pedicels ⅓–½ in. long; bracts minute. Perianth cylindrical, green, slightly tinged with purple, ¼ in. long; segments ligulate. Stamens shorter than the perianth; filaments bright mauve-purple.

Mozamb. Dist. German East Africa: Zanguebar, at "Bibi Holly's Shamba," in a close plantation, 300 ft., *Kirk*, 66!

39. **S. textilis,** *Rendle in Journ. Linn. Soc.* xxx. 427. Bulb ovoid, above 1 in. diam. Leaves 5–6, broadly ovate above the sheathing petiole, acuminate, 3–3½ in. long, 1½ in. broad at the middle, firm in texture, with many strong veins and a minutely wavy margin. Peduncle flexuose, 4–5 in. long. Raceme dense, oblong, 2–3 in. long; pedicels ¼ in. long, spreading or cernuous; bracts minute, linear-subulate. Perianth greenish, 2–2½ lin. long; segments ligulate from a broader base. Filaments lilac-purple.

Mozamb. Dist. German East Africa: Unyamwezi; Uyui, *Taylor*.

Imperfectly known species.

40. **S. gracillima,** *Engl. Pfl. Ost-Afr. C.* 142. Whole plant 4 in. high. Bulb ovoid. Leaves 2, narrowed into a petiole as long as the blade. Peduncle slender, longer than the leaves. Raceme lax, 12–15-flowered; pedicels very slender, shorter than the perianth. Perianth campanulate-cylindric; segments linear.

Mozamb. Dist. Portuguese East Africa: Lower Zambesi valley, at Sena, *Peters*.

28. **MERENDERA,** Ram.; Benth. et Hook. f. Gen. Plant. iii. 822.

Perianth polyphyllous; segments subequal, with long narrow connivent claws and lanceolate or oblong-lanceolate blades. Stamens 6, inserted at the base of the blade of the perianth-segments; filaments filiform; anthers linear or oblong, versatile or nearly basifixed. Ovary sessile, 3-celled; ovules superposed; styles 3, long, filiform; stigmas minute, capitate. Capsule septicidally 3-valved. Seeds subglobose; testa brown, opaque; albumen firm; embryo small.—Rootstock a tunicated corm. Leaves contemporary with the flowers. Peduncle very short. Flowers white or lilac.

Nearly allied to *Colchicum*, from which it differs by its polyphyllous perianth.

Species 15, the others East European and West Asiatic.

1. **M. abyssinica,** *A. Rich. Tent. Fl. Abyss.* ii. 337. Corm small, globose; tunics rigid, brown-black, produced over its neck; underground neck 1–2 in. long, furnished with a cylindrical membranous sheathing leaf. Leaves 2–6, linear, glabrous, ascending or spreading, 2–3 in. long. Flowers 1–2, subsessile in the centre of the rosette of

leaves. Perianth lilac, with a filiform claw about an inch long and a lanceolate blade nearly or quite as long, not auricled at the base. Stamens half as long as the blade of the perianth-segments; anthers linear, almost basifixed.—Baker in Journ. Linn. Soc. xvii. 440; Engl. Hochgebirgsfl. Trop. Afr. 159; *M. schimperiana*, Hochst, and *M. longispatha*, Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 337.

Nile Land. Abyssinia: Samen; on mountains between Enjedcap and Shoata, 2000 ft., below Enjedcap, *Schimper*, 1126! in dry places on mountains near Enjedcap, *Schimper*, 1167! Shoa; Ankober, *Roth*, 106! and without precise locality, *Schimper*, 306! Dembea; at Chelga, *Steudner*, 495, and Jenda, Steudner, 494 (ex *Engler*); Galla Highlands; at Sebit, Steudner, 493 (ex *Engler*).

Also at Aden.

29. **ANDROCYMBIUM,** Willd.; Benth. et Hook. f. Gen. Plant. iii. 822.

Perianth-segments distinct, equal, with narrow connivent claws and spreading narrow blades, concave and nectariferous at the base. Stamens 6, inserted at the base of the blade of the perianth-segments; filaments filiform, thickened towards the base; anthers oblong, slightly versatile. Ovary sessile, 3-celled; ovules many, superposed; styles 3, distinct, filiform, stigmatose at the apex. Capsule septicidally 3-valved. Seeds subglobose; testa brown, opaque; albumen firm; embryo minute. —Rootstock a tunicated corm. Stem usually not produced, so that the flowers form a sessile cluster in the centre of a rosette of leaves.

Species 20, two inhabiting the Mediterranean and Oriental regions, the others in South Africa.

Acaulesent.	
Stamens shorter than the blade	1. *A. roseum.*
Stamens longer than the blade	2. *A. subulatum.*
Stem 2–3 in. long	3. *A. melanthioides*, var. *striatum.*

1. **A. roseum,** *Engl. Jahrb.* x. 282. Acaulescent. Corm globose, under 1 in. diam.; tunics rigid, dull brown; neck 1–2 in. long. Proper leaves several, linear from an ovate base, 3–6 in. long; inner (bracts) ovate, not pale and veined with green. Flowers many in a cluster. Perianth-segments 1 in. long; blade lanceolate, pale red, about as long as the claw. Filaments much shorter than the blade of the perianth-segments; anthers small, oblong.

Lower Guinea. Hereroland: Otyikango-Okatiti, and near the hot spring "Barmen," Marloth 1360, Schinz 62, Gobabis, *Schinz*, 63! Angola: Huilla; at Humpata, *Johnston!* Camba Serreno, *Newton!*

2. **A. subulatum,** *Baker in Journ. Bot.* 1874, 245. Acaulescent. Corm ovoid, ½ in. diam.; outer tunics rigid, nearly black; neck under an inch long. Proper leaves 2–3, linear-subulate, moderately firm, glabrous, channelled down the face, 4–8 in. long; bracts 3–6, much overtopping the flowers, oblong or ovate-cuspidate, 1½–2 in. long,

whitish, veined with green. Corymb few-flowered; pedicels very short. Perianth $\frac{1}{2}$ in. long; claw of the segments as long as the oblong-cuspidate blade. Filaments a little longer than the blade of the perianth-segments; anthers $\frac{1}{12}$ in. long.—Baker in Journ. Linn. Soc. xvii. 442; *A. melanthioides*, var. *subulatum*, Baker in Fl. Cap. vi. 517.

Mozamb. Dist. British Central Africa: Mashonaland; on a wooded "sand-bult" south of the Umsweswe River, *Baines!*

Also in the Transvaal.

3. **A. melanthioides,** *Willd.* var. **striatum**, *Baker in Journ. Linn. Soc.* xvii. 442. Corm oviod, $\frac{1}{2}$–$\frac{3}{4}$ in. diam.; tunics firm, blackish. Stem erect, 2–3 in. long, bearing 2–3 ascending glabrous linear or lanceolate leaves, 3–4 in. long. Flowers few in a cluster; pedicels short, erect; bracts few, ovate-cuspidate or oblong, 1 in. long, whitish, veined with green. Perianth whitish, $\frac{1}{2}$ in. long; blade of the segments oblong-lanceolate, longer than the claws. Stamens shortly exserted.—*A. striatum*, Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 336; Engl. Hochgebirgsfl. Trop. Afr. 159.

Nile Land. Abyssinia: Samen; in meadows near Enjedcap, *Schimper*, 1338! and without precise locality, *Schimper*, 323! British East Africa: Kikuyu; at Ngoro, 6000 ft., *Höhnel!* and between Lake Victoria Nyanza and Lake Baringo, at Ligaiyo, *Fischer*, 622 (ex *Engler*).

Mozamb. Dist. British East Africa: Nyasaland; Blantyre, *Buchanan*, 24! Mount Sochi, *Scott-Elliot*, 8608! Mount Malosa, 4000–6000 ft., *Whyte!* Mount Zomba, 4000–6000 ft., *Whyte!*

30. **WURMBEA**, Thunb.; Benth. et Hook. f. Gen. Plant. iii. 823.

Perianth firm, persistent; tube short, campanulate or cylindrical; segments 6, equal, spreading. Stamens 6, inserted at the throat of the perianth-tube; filaments short, filiform; anthers oblong, minute, versatile. Ovary sessile, 3-celled; ovules many, superposed; styles 3, distinct, short, falcate, stigmatose at the apex. Capsule septicidally 3-valved. Seeds subglobose; testa brown; albumen firm; embryo minute.—Rootstock a tunicated corm. Stem produced. Leaves narrow, cauline. Flowers spicate, ebracteate, whitish or purplish-brown.

Species 7, the others in South Africa and Australia.

1. **W. tenuis,** *Baker in Journ. Linn. Soc.* xvii. 436. Corm globose, $\frac{1}{4}$–$\frac{1}{3}$ in. diam.; tunics firm, brown-black. Stem slender, erect, 1–2 in. long, bearing 2–3 leaves, the lowest much the largest, linear-subulate, firm, glabrous, 2–3 in. long, the uppermost short, with a dilated clasping base. Flowers usually 2, laxly spicate. Perianth $\frac{1}{4}$ in. long, white, tinged with brown-purple; tube very short; segments oblanceolate, with a brown gland on the face above the base. Stamens half as long as the perianth-segments.—Engl. Hochgebirgsfl. Trop. Afr. 159. *Melanthium tenue*, Hook. f. in Journ. Linn. Soc. vii. 223.

Upper Guinea. Mountains of Fernando Po, 9000 ft., *Mann*, 1454! Cameroons, *Preuss*, 933!

31. **ORNITHOGLOSSUM,** Salisb.; Benth. et Hook f. Gen. Plant. iii. 824.

Perianth-segments distinct, firm, equal, reflexing, linear or lanceolate, furnished with a gland on the face above the claw. Stamens 6, hypogynous, shorter than the perianth; filaments filiform, slightly thickened at the middle; anthers linear-oblong, versatile. Ovary sessile, 3-celled; ovules many, superposed; styles 3, distinct, subulate, falcate, stigmatose at the apex. Capsule obovoid, obtuse, finally loculicidally 3-valved. Seeds globose; testa thick, fleshy; albumen firm; embryo minute.

Monotypic.

1. **O. glaucum,** *Salisb. in Hook. Parad. t.* 54. Rootstock a globose tunicated corm. Stems simple, erect, $\frac{1}{2}$–1 ft. long. Lower leaves lanceolate, clasping, often crowded; upper linear, much produced. Flowers forming a lax raceme, produced singly on long ascending pedicels, cernuous at the apex, from the axils of the reduced upper leaves. Perianth-segments linear, dark brown, $\frac{1}{2}$ in. long. Stamens about half as long as the perianth. Styles subulate, $\frac{1}{6}$–$\frac{1}{4}$ in. long. Capsule obovoid, $\frac{1}{2}$–$\frac{3}{4}$ in. long.—Baker in Journ. Linn. Soc. xvii. 449, and Fl. Cap. vi. 525. *Melanthium viride,* Linn. f. Suppl. 213.

Mozamb. Dist. British East Africa: Nyasaland; near Blantyre, *Last!*

Var. *grandiflorum,* Baker, loc. cit. Stems more robust. Leaves broader. Flowers and fruit large.

Lower Guinea. German South-west Africa: Amboland; Omambonde, *Schinz,* 17!

Widely spread in South Africa.

32. **IPHIGENIA,** Kunth; Benth. et Hook. f. Gen. Plant. iii. 824.

Perianth cut down to the base; segments equal, subulate, linear or oblong-lanceolate, spreading, caducous, obscurely unguiculate, not foveolate on the face. Stamens 6, hypogynous, shorter than the perianth-segments; filaments slightly or much thickened; anthers oblong, minute, versatile. Ovary sessile, 3-celled; ovules many, superposed; styles 3, short, falcate, obliquely stigmatose at the apex. Capsule chartaceous, loculicidally 3-valved. Seeds subglobose; testa brown, with a small strophiole; albumen fleshy; embryo minute.—Rootstock a small tunicated corm. Stem produced, bearing few or many spaced-out narrow leaves. Flowers inconspicuous, brown-black, usually produced on single pedicels from the axils of the upper leaves.

Species 9, extending through Tropical Asia to North Australia, none in South Africa.

Perianth-segments subulate.	
Flowers few, erect	1. *I. somaliensis.*
Flowers few, ascending or cernuous	2. *I. bechuanica.*
Flowers many, cernuous	3. *I. Oliveri.*
Perianth-segments lanceolate	4. *I. strumosa.*
Perianth-segments oblong-lanceolate	5. *I. guineensis.*

1. **I. somaliensis,** *Baker in Kew Bulletin*, 1895, 228. Stem 1 ft. long, bearing several grass-like ascending linear, acuminate clasping leaves, the lowest 6–8 in. long, the upper gradually shorter. Flowers few, produced singly on short erect pedicels from the axils of the upper leaves. Perianth-segments subulate, $\frac{1}{2}$ in. long. Stamens shorter than the ovary. Ovary subglobose, $\frac{1}{6}$ in. diam.; styles very short.

Nile Land. British Somaliland: at Wadaba, *Miss Edith Cole ! Mrs. E. Lort-Phillips !*

2. **I. bechuanica,** *Baker*. Stem $\frac{1}{2}$ ft. long, flexuose, with one leaf sheathing the lower third and 6–7 produced alternate superposed linear leaves, 4–5 in. long, $\frac{1}{4}$ in. broad. Flowers solitary from the axils of the 4 upper leaves on short cernuous or ascending pedicels. Perianth-segments linear, green, ascending, $\frac{1}{4}$ in. long. Stamens not longer than the ovary. Ovary globose; styles 3, short, subulate, falcate.

Mozamb. Dist. British Central Africa: Ngamiland; near Kwebe, *Lugard*, 81 !

3. **I. Oliveri,** *Engl. Jahrb.* xv. 467. Corm not seen. Stems 8–12 in. long, flexuose, bearing a dozen or more ascending clasping narrowly linear leaves, the lowest 3–4 in. long, the upper gradually shorter. Flowers produced singly from the axils of most of the leaves, on cernuous pedicels $\frac{1}{2}$–$\frac{3}{4}$ in. long. Perianth-segments subulate, $\frac{1}{4}$ in. long. Stamens less than half as long as the perianth-segments. Capsule obovoid-oblong, obtuse, emarginate, $\frac{1}{3}$ in. long.

Nile Land. British East Africa: at Taveta, 2000 ft., *Johnston !*

4. **I. strumosa,** *Baker*. Stem slender, erect, nearly 1 ft. long, with one long sheathing leaf in the lower part and 8–9 superposed, narrowly linear, erecto-patent on the flexuose upper part, the lowest 3–4 in. long, $\frac{1}{12}$ in. broad. Flowers solitary from the axils of the 4–6 upper leaves, on ascending pedicels, the lowest 1 in. long. Perianth-segments lanceolate, green, reflexing, $\frac{1}{6}$ in. long. Stamens $\frac{1}{12}$ in. long; filaments dark brown, much dilated in the lower half. Ovary globose, shorter than the stamens; styles minute.

Mozamb. Dist. British Central Africa: Ngamiland; at Kwebe, *Lugard*, 59 !

5. **I. guineensis,** *Baker in Journ. Linn. Soc.* xvii. 451. Corm globose, $\frac{1}{3}$ in. diam.; outer tunics dark brown. Stem slender, 4–5 in. long, bearing 2–3 ascending linear-subulate leaves, the lowest 2–3 in. long, the others shorter. Flowers 2–3 from the axils of the uppermost leaf, on stiffly erect pedicels $1\frac{1}{2}$–2 in. long. Perianth-segments oblong-lanceolate, brownish-white, $\frac{1}{4}$ in. long. Stamens $\frac{1}{3}$ the length of the perianth-segments. Ovary turbinate.—*Melanthium guineense*, Welw. ex Baker, l. c.

Lower Guinea. Angola, *Welwitsch*, 1625 ! 1626 !

33. **GLORIOSA**, Linn.; Benth et Hook. f. Gen. Plant. iii. 830.

Perianth polyphyllous; segments subequal, oblong or lanceolate, unguiculate, spreading or reflexing. Stamens 6, hypogynous, shorter than the perianth; filaments filiform; anthers linear-oblong, versatile. Ovary sessile, oblong, 3-celled; ovules many, superposed; style deflexed from the base, entire in the lower part, with 3 subulate forks obliquely stigmatose at the tip. Capsule coriaceous, septicidally 3-valved. Seeds globose; testa bright red, spongy; albumen firm; embryo minute.—Rootstock an irregular fleshy tuber. Stems often sarmentose, with the leaves cirrhose at the tip. Flowers large, bright-coloured, corymbose.

One of the species extends to Tropical Asia, and another to Natal.

Stems long, sarmentose.
- Perianth-segments crisped . . . . . 1. *G. superba.*
- Perianth-segments not crisped . . . . . 2. *G. virescens.*

Stems short, erect.
- Flowers solitary, $1\frac{1}{2}$ in. long . . . . . 3. *G. minor.*
- Flowers several, 2–3 in. long.
  - Leaves cirrhose at the tip . . . . . 4. *G. abyssinica.*
  - Leaves not cirrhose at the tip . . . . . 5. *G. Carsoni.*

1. **G. superba,** *Linn. Sp. Plant. edit.* ii. 437. Stems long, branched, sarmentose. Leaves sessile, oblong-lanceolate, $\frac{1}{2}$ ft. long, conspicuously circinate at the apex, usually opposite or ternate. Flowers forming a lax corymb, solitary from the axils of upper reduced leaves; pedicels long, cernuous at the apex. Perianth 2–3 in. long; segments lanceolate, reflexing, much crisped, bright red-yellow. Filaments shorter than the perianth; anthers linear, $\frac{1}{2}$ in. long. Ovary $\frac{1}{2}$–$\frac{3}{4}$ in. long; style $1\frac{1}{2}$–2 in. long, 3-branched towards the apex. Capsule 2 in. or more long.—Bot. Reg. t. 77; Andr. Bot. Rep. t. 129; Baker in Fl. Cap. vi. 526; Lam. Encyc. iv. 133. *G. angulata*, Schum. and Thonn. Beskr. Guin. 171; *G. doniana*, Rœm. et Schultes, Syst. Veg. vii. 366. *Methonica superba*, Crantz, Inst. i. 474; Red. Lil. t. 26. *M. doniana*, Kunth, Enum. iv. 277.

Upper Guinea. Gambia, *Brown-Lester!* Niger Territory: Nupe, *Barter*, 1517! Old Calabar, *Goldie! Holland*, 79! Cameroons: Rio del Rey, *Johnston!*

Lower Guinea. Portuguese Congo: Chinchocho, *Soyaux*, 170! Angola, *Welwitsch*, 1743! 1744! *Monteiro!* French Congo, *Duparquet*, and several other collectors.

Mozamb. Dist. British Central Africa: Nyasaland; Manganja Hills, *Waller!*

Var. *angustifolia*, Baker in Journ. Linn. Soc. xvii. 458. Leaves linear, $\frac{1}{2}$ ft. long, $\frac{1}{4}$–$\frac{1}{3}$ in. broad.

Mozamb. Dist. German East Africa: banks of the Lower Rovuma River, *Meller!*

Also in Tropical Asia.

2. **G. virescens,** *Lindl. in Bot. Mag. t.* 2539. Stem long, branched, sarmentose. Leaves usually oblong or oblong-lanceolate, acuminate, with a cirrhose tip, the lower verticillate or opposite, 5–6 in. long. Flowers

forming a lax terminal corymb; pedicels long, cernuous at the tip. Perianth 1½–2½ in. long, strongly reflexing; segments lanceolate-cuspidate, scarcely at all crisped, ⅓–½ in. broad at the middle, variable in colour, bright red or yellow, or in the original *virescens*, yellow tinged outside with green. Filaments about half as long as the perianth; anthers linear, ⅓ in. long. Style 1–1½ in. long, branched in the upper third. Capsule 2–2½ in. long.—Baker in Journ. Linn. Soc. xvii. 458, and in Fl. Cap. vi. 526. *Methonica virescens*, Kunth, Enum. iv. 277; Hook. in Bot. Mag. t. 4938. *M. virescens*, var. *Plantii*, Fl. des Serres, t. 865. *M. petersiana*, Klotzsch in Peters, Reise Mossamb. Bot. t. 54. *M. platyphylla*, Klotzsch, loc. cit. t. 55.

Upper Guinea. Sierra Leone, *Scott-Elliot*, 3838! *Morson!* Lagos, *Millen*, 7! 217! Lower Niger; Abo, *Barter*, 164! Cameroons: Yaunde, *Zenker & Staudt*, 599! Bipinde, *Zenker*, 1005! and Efulen, *Bates*, 416!

Nile Land. Kordofan, *Pfund*, 139! 865! British East Africa: Jur; Jur Ghattas, *Schweinfurth*, 1957! Toru District; Wimi Valley, *Scott-Elliot*, 7876! Uganda; in grass-land near water, *Wilson*, 108! Ukamba; Kitui, *Hildebrandt*, 2649! Nyika country near Mombasa, *Wakefield*, 25! Mombasa Island, *Wakefield!* Wanga, *Smith!*

Lower Guinea. Lower Congo: Stanley Pool, *Büttner*, and Leopoldville, *Dybowski*. Angola, *Welwitsch*, 1745! 1746! Malange, *Marques*, 24! German South-West Africa: Amboland; Amieb, *Belck*, 32, and at Otavi, near Water Berg, *Dove* (ex *Schinz*); Hereroland; near Olukonda, *Schinz*, 903, *Rautanen*, 101, and Omupanda, *Wulfhorst*, 17 (ex *Schinz*).

South Central. Congo Free State: Upper Congo, at Katanga, *Briart*.

Mozamb. Dist. Zanzibar: in a clove plantation, *Speke & Grant!* German East Africa: Karagwe, 3000–4000 ft., *Speke & Grant*, 484! Kilimanjaro, 2000–3000 ft., *Johnston!* Usambara; Amboni, *Holst*, 2154! Lake Tanganyika, *Cameron!* Rovuma Bay, *Kirk!* Portuguese East Africa: Mozambique, *Forbes! Peters;* Lower Zambesi; opposite Sena, *Kirk!* Shimwara Hill, at the mouth of the River Shire, *Kirk!* British Central Africa: Nyasaland; Shire Highlands, *Scott-Elliot*, 8626! Plains of Zomba, 2500–3000 ft., *Whyte!* Rhodesia; Leshumo Valley, south of the River Zambesi, *Holub!* Ngamiland; Botletle Valley, *Lugard*, 213!

Also in Natal and Madagascar.

Var. *grandiflora*, Baker in Journ. Linn. Soc. xvii. 458. Flowers larger; perianth-segments 3–4 in. long, 8–9 lin. broad at the middle.—*Methonica grandiflora*, Hook. in Bot. Mag. t. 5216; Ill. Hort. viii. t. 273. *M. Leopoldi*, Lemaire in Fl. des Serres, t. 163–4 (flowers yellow).

Upper Guinea. Niger Delta: Grand Bassa, *Vogel*, 22! Fernando Po, *Mann*, 72!

Nile Land. British East Africa: in marshy ground at Abu Kuka, on the Bahr-el-Jebel, *Petherick!*

G. simplex, Linn. Mant. 62, and *G. cærulea*, Mill. Gard. Dict. edit. viii. No. 2, are doubtful names, which probably both belong to this species.

3. **G. minor,** *Rendle in Journ. Bot.* 1896, 132. Stem erect, slender, flexuose, 6–8 in. long, bearing about 20 leaves just above its middle, all except the lowest verticillate. Leaves sessile, linear, falcate, not cirrhose at the apex, the longest 2½–3 in. long, under ¼ in. broad. Flowers solitary, crimson; pedicels 2 in. long, erect, cernuous at the apex. Perianth-segments strongly reflexed, lanceolate, acute, 1½ in.

long, ¼ in. broad above the middle. Filaments above ½ in. long; anthers linear-oblong, ¼ in. long. Style under 1 in. long, trifid to the middle.

Nile Land. Somaliland: a little west of the Shebeli River, 2000 ft., *Donaldson-Smith!*

4. **G. abyssinica,** *A. Rich. Tent. Fl. Abyss.* ii. 322. Stem erect, 1½–2 ft. long, simple or branched. Leaves oblong, acuminate, sometimes distinctly cirrhose at the apex, the lower verticillate or opposite, 5–6 in. long, 1½ in. broad, the upper smaller, alternate. Flowers produced from the axils of several of the upper leaves; pedicels 3–4 in. long, cernuous at the apex. Perianth-segments reflexed, not at all crisped, oblong, unguiculate, cuspidate, 2–3 in. long, ¾–1 in. broad at the middle. Filaments about 1 in. long; anthers linear, ⅓–½ in. long. Style 1½ in. long, trifid above the middle.—Baker in Journ. Linn. Soc. xvii. 458. *G. speciosa*, Engl. Hochgebirgsfl. Trop. Afr. 158; Schweinf. in Bull. Herb. Boiss. ii. App. ii. 59. *Clinostylis speciosa*, Hochst. in Flora, 1844, 26.

Nile Land. Eritrea: Donkollo Heights, near Ginda, 3000 ft., *Schweinfurth & Riva*, 127; Bogos, *Steudner*, 446! and near Keren, *Hildebrandt*, 379. Abyssinia: Tigre; near Jelajeranne, *Schimper*, 1437! Shire Province, *Quartin-Dillon & Petit*, 48! Shoa; Aliu Amba, near Ankober, *Roth*, 182! and without precise locality, *Schimper*, 346!

Var. *graminifolia*, Franch. Sert. Somal. 67. Leaves and segments of the perianth linear, the latter only ⅛–⅕ in. broad.

Nile Land. Somaliland: Karoma Peak, *Révoil!*

5. **G. Carsoni,** *Baker in Kew Bulletin*, 1895, 74. Stem erect, 1½ ft. long. Leaves oblong-lanceolate, sessile, 4–5 in. long, 1–1¼ in. broad below the middle, acute, not cirrhose at the apex; lower opposite, upper alternate. Flowers 5–6 in a lax terminal corymb, on long ascending pedicels, cernuous at the apex. Perianth 2–2½ in. long, red, slightly tinged with yellow; segments strongly reflexed, oblanceolate, acuminate, ½ in. broad above the middle. Filaments half as long as the perianth; anthers linear. Ovary ⅓ in. long; style twice as long as the ovary, branched in the upper third.

Mozamb. Dist. British Central Africa: Urungu; Fwambo, *Carson*, 53 of 1894 collection! Nyasaland; Nyika Plateau, 6000–7000 ft., *Whyte!* and Mount Malosa, 4000–6000 ft., *Whyte!*

34. LITTONIA, Hook.; Benth. et Hook. f. Gen. Plant. iii. 831.

Perianth campanulate, cut down nearly or quite to the base; segments equal, oblong-lanceolate, nectariferous and obscurely saccate at the base. Stamens 6, inserted at the base of the perianth-segments; filaments filiform; anthers linear-oblong, versatile. Ovary globose, sessile, 3-celled; ovules many, superposed; style entire in the lower part, 3-forked upwards; stigmas minute, capitate. Capsule coriaceous, septicidally 3-valved. Seeds globose; testa brown; albumen firm;

embryo minute.—Rootstock a fleshy tuber. Stems erect in the Tropical African species and leaves not cirrhose at the tip, as in the original Cape type. Flowers solitary in the axils of many of the leaves, bright-coloured.

Three additional species, 2 in Arabia, and 1 in South Africa.

Leaves oblong.
- Perianth $\frac{1}{2}$–$\frac{3}{4}$ in. long . . . . . 1. *L. Welwitschii.*
- Perianth 1–$1\frac{1}{2}$ in. long . . . . . 2. *L. Lindeni.*

Leaves linear.
- Leaves glabrous . . . . . 3. *L. Hardeggeri.*
- Leaves hispid . . . . . 4. *L. Revoili.*

1. **L. Welwitschii,** *Benth. Gen. Plant.* iii. 831. Stem 1 ft. long, very flexuose, leafy in the upper half. Leaves oblong, acute, subcoriaceous, glabrous, sometimes uncinate at the tip, the largest 2–4 in. long, $\frac{3}{4}$–1 in. broad. Flowers solitary from the axils of the upper leaves; pedicels ascending, cernuous at the apex, 1–2 in. long. Perianth purplish-orange, $\frac{1}{2}$–$\frac{3}{4}$ in. long; segments linear-oblong, connate at the base. Stamens much shorter than the perianth; filaments $\frac{1}{8}$ in. long. Ovary oblong, $\frac{1}{4}$–$\frac{1}{3}$ in. long; style as long as the ovary, with 3 spreading branches $\frac{1}{8}$ in. long.—*Sandersonia littonioides,* Welw. ex Baker in Trans. Linn. Soc. ser. 2, Bot. i. 262.

Lower Guinea. Angola: Pungo Andongo; in woods, 2400–3800 ft., *Welwitsch,* 1747!

2. **L. Lindeni,** *Baker.* Stem short, erect, leafy over only about 3 in. Leaves oblong, acute, sessile, subcoriaceous, glabrous, the largest 3 in. long, under 1 in. broad, some obscurely uncinate at the tip. Flowers 3, on ascending ebracteate pedicels 1–2 in. long, cernuous at the apex, from the axils of the upper leaves. Perianth 1–$1\frac{1}{4}$ in. long; segments lanceolate, $\frac{1}{8}$ in. broad. Stamens less than half as long as the perianth; anthers linear, $\frac{1}{8}$ in. long. Style trifid to the base.

Mozamb. Dist. German East Africa: Ujiji, on Lake Tanganyika, "frequent in the Ourambo," received at Kew through Mr. L. Linden, in 1884, from the Belgian consul at Zanzibar!

South Central. Congo Free State; at Mpweto (?) on Lake Moero, *Descamps!*

3. **L. Hardeggeri,** *Beck in Paulitschk. Expedit. Harar.* 451, *fig.* 8–9. Stem $\frac{1}{2}$–1 ft. long, erect, densely leafy in the upper half. Leaves crowded, ascending, sessile, linear, subcoriaceous, glabrous, strongly ribbed, the lowest 3–4 in. long, $\frac{1}{8}$–$\frac{1}{6}$ in. broad, some uncinate at the tip. Flowers 2–3 from the axils of the upper leaves, on short, erect pedicels. Perianth $1\frac{1}{4}$–$1\frac{1}{2}$ in. long; segments oblanceolate-unguiculate, acute, with a linear nectary on the claw. Stamens nearly as long as the perianth; anthers linear, $\frac{1}{8}$ in. long. Style $\frac{1}{8}$ in. long, with 3 falcate branches.

Nile Land. British Somaliland: near Agarweyna and Dadab, *Paulitschke,* and without precise locality, *Mrs. E. Lort-Phillips!*

4. **L. Revoili,** *Franch. Sert. Somal.* 66. Stem erect, $\frac{1}{2}$–1 ft. long. Leaves dense, linear, or narrowly lanceolate, sometimes uncinate at the tip, shortly hispid on both surfaces. Flowers from the axils of the upper leaves, on long suberect pedicels. Perianth yellow; segments narrowly oblong, with a linear nectary on the claw. Stamens rather shorter than the perianth. Ovary oblong, shortly stipitate; style tripartite to the middle.—Engl. Hochgebirgsfl. Trop. Afr. 159.

Nile Land. Somaliland: valley of Barroz, in the country of the Medjourtines, *Révoil.*

No specimen at Kew.

Imperfectly-known species.

5. **L. Baudii,** *Terrac. in Bull. Soc. Bot. Ital.* 1892, 425. Stem erect, slightly pilose at the base. Leaves crowded, ensiform, ciliolate. Perianth large, rose-red; segments obovate-oblong, reflexed, connate at the base. Stamens scarcely as long as the perianth. Style only tripartite at the apex.

Nile Land. Somaliland: fields of Gerar Amaden, *Baudi di Vesme.*

May be a *Gloriosa,* as the perianth-segments are said to reflex, but I have not seen any specimen.

35. **WALLERIA,** Kirk; Benth. et Hook. f. Gen. Plant. iii. 831.

Perianth adnate to the base of the ovary; segments free above the adnate base, spreading, equal, oblong-lanceolate, laxly many-nerved. Stamens 6, inserted at the base of the segments of the perianth; filaments very short; anthers large, linear, persistently connivent in a cone, dehiscing by apical pores. Ovary globose, 3-celled; ovules many, superposed; style subulate; stigma small, capitate. Mature capsule and seeds unknown.—Rootstock tuberous. Stems erect, with many spaced out leaves. Flowers usually single, on pedicels from the axils of many of the leaves.

One species extends to the Transvaal.

Probably the best place for this is in *Hæmodoraceæ* besides *Cyanella* and *Conanthera.*

Flowers erect . . . . . 1. *W. Mackenzii.*
Flowers cernuous . . . . . 2. *W. nutans.*

1. **W. Mackenzii,** *Kirk in Trans. Linn. Soc.* xxiv. 497, *t.* 52, *fig.* 2. Rootstock an irregular fleshy tuber. Stems erect, 1–1$\frac{1}{2}$ ft. long. Leaves 20–30, sessile, ascending, lanceolate or oblong-lanceolate, acute, 2–4 in. long, moderately firm, glabrous. Flowers produced, usually singly, from the axils of many of the leaves on ascending, often bracteolate pedicels 1–1$\frac{1}{2}$ in. long. Perianth blue, $\frac{1}{2}$–$\frac{3}{4}$ in. long; segments $\frac{1}{6}$ in. broad. Stamens rather shorter than the perianth; anthers $\frac{1}{3}$ in. long.—Baker in Journ. Linn. Soc. xvii. 499. *W. angolensis,* Baker in Trans. Linn. Soc. ser. 2, Bot. i. 262; Engl. Hochgebirgsfl. Trop. Afr. 159.

Lower Guinea. Angola: Huilla, on stony hills, 3800–5500 ft., *Welwitsch*, 1749!

Mozamb. Dist. Lake Tanganyika, *Cameron!* German East Africa: between Uyui and the coast, *Taylor*. British Central Africa: Nyasaland; Manganja Hills, *Waller!* Magomero, 3000 ft., *Waller!* Shire Highlands, *Buchanan*, 71! Mount Zomba, *Whyte!* and without precise locality, *Buchanan*, 8!

2. **W. nutans,** *Kirk in Trans. Linn. Soc.* xxiv. 497, *t.* 52, *fig.* 1. Differs only from the other species by its linear leaves and cernuous pedicels.—Baker in Fl. Cap. vi. 528.

Mozamb. Dist. German East Africa: between Uyui and the coast, *Taylor*. British Central Africa: Nyasaland; Manganja Hills, *Waller!*

Also in the Transvaal.

ADDENDA.

3*a*. **Boottia muricata,** *C. H. Wright.* Plant immersed in water to within 2–3 in. of the flowers (*Lugard*); growing in 10–12 ft. of water, with a very slender stem (*McCabe*). Leaves unknown. Peduncle 4 ft. long, muricate in the upper part. Spathe $2\frac{1}{2}$ in. long, cylindrical, 2-lobed, muricate. Perianth-tube 2 in. long; outer segments linear, $\frac{3}{4}$ in. long, green; inner deltoid, white, $\frac{1}{2}$ in. broad. Styles 6, filiform, hairy, yellow.

Mozamb. Dist. British Central Africa: Ngamiland; Botletle River, *Lugard*, 13! River Chobe, *McCabe*, 32!

54*a*. **Eulophia graciliscapa**, *Schlechter in Engl. Jahrb.* xxiv. 418. Plant slender, erect, 2–$2\frac{3}{4}$ ft. high. Leaves fascicled, erect, linear, acute, shorter than the scape, 8 lin. broad. Scape straight, rather slender, clothed with several long membranous sheaths. Spike oblong or cylindrical, lax or somewhat dense, 2–3 in. long, many-flowered. Bracts erect, dry, linear, setaceous and very acute, equalling or slightly exceeding the slender pedicels. Sepals subequal, lanceolate, acute or subacuminate, 5 lin. long, $2\frac{1}{2}$ lin. broad, lateral oblique. Petals obliquely oblong, shortly apiculate at the apex, somewhat narrowed near the base, 4–$4\frac{1}{2}$ lin. long, 2–$2\frac{1}{2}$ lin. broad. Lip 3-lobed, oblong; side lobes erect, triangular-lanceolate, subobtuse; middle lobe oblong, subtruncate or obtuse, much larger than the side lobes and with slightly crisped margin; disc with a pair of parallel keels extending up to the base of the front lobe and some irregular elongate papillæ in front; spur conical, short and obtuse. Column linear, slender, nearly half as long as the petals, with a short foot; anther minutely apiculate.

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan*.

Only known to me from the original description, in which it is compared with the South African *E. papillosa*, Schlechter.

66. **Eulophia galeoloides,** *Kränzl. in Engl. Jahrb.* xxiv. 508. Stem subterranean, long creeping and rootless, sparsely beset with lenticellate or semiglobose white tubercles (haustoria?). Leaves undeveloped at flowering time. Flowering stems fascicled, 2 or 3, fleshy, short, up to 6 in. high, red or brown, clothed with white bract-like sheaths veined with black. Raceme corymbose, congested, few- to many-flowered. Bracts lanceolate, acuminate, cymbiform, white or yellowish-white, $1\frac{1}{4}$ in. long, 4 lin. broad. Pedicels nearly as long as

the ovary. Flowers pale yellow outside, deep yellow inside near the apex, and the petals veined with violet. Sepals lanceolate, acute, 1 in. long. Petals oblong, acute, 10 lin. long. Lip 10 lin. long; side lobes semioblong or obtriangular, with the outer angle rounded; front lobe oblong, retuse, with the front margin minutely crisped; disc wholly covered with elevated denticulate veins, somewhat radiating towards the margin, and nearly as high as the central keels which extend from base to apex; spur subulate, straight, 1 lin. long. Column acute, half as long as the lip.

Mozamb. Dist. German East Africa: Usambara; on the Handei Mountains at Nderema, 2700 ft., *Heinsen*, 10.

An anomalous species, only known to me from the original description, but said to recall *Limodorum* or *Galeola* rather than *Eulophia*.

10*a*. **Mystacidium angustum,** *Rolfe*. Stem short or somewhat climbing. Leaves lanceolate or oblong-lanceolate, unequally and acutely bidentate, $1\frac{3}{4}$–3 in. long, 5–6 in. broad. Raceme slender, 2–3 in. long, 2–3-flowered. Bracts tubulose-spathaceous, acute, keeled, 1 lin. long. Pedicels slender, 9–11 lin. long. Flowers white, slightly tinged with brown on the sepals and petals. Sepals spreading, linear, attenuate, curved, 10–11 lin. long. Petals reflexed, narrower than the sepals. Lip 6 lin. long, oblong and obtusely keeled at the base, suddenly expanded at the middle into a cordate limb, with a long acuminate reflexed apex; spur 9–10 lin. long, narrowly funnel-shaped and subcompressed at the base, slender in the middle, and subclavate at the apex. Column very short; stipes of the pollinia and glands both distinct.

Upper Guinea. Old Calabar; Cross River, at Itu, *Holland!*

Remarkable for its long, narrow sepals and petals, and the cordate limb of the lip. It is in cultivation at Kew.

6*a*. **Brachycorythis Buchananii,** *Rolfe*. Plant slender, erect, glabrous. Stem straight or slightly flexuous, many-leaved, clothed with loose sheaths at the base. Leaves ovate-lanceolate or ovate-elliptic, setaceous-acuminate, the lower $1\frac{1}{4}$–2 in. long, 5 lin. broad, decreasing upwards into the bracts. Spikes cylindrical, rather dense, $1\frac{1}{2}$–$3\frac{1}{2}$ in. long, 7 lin. broad, many-flowered. Bracts lanceolate, very acute or acuminate, the lower exceeding the flowers, the upper smaller. Sepals ovate, subobtuse, 2 lin. long, 1 lin. broad; lateral erecto-patent and oblique at the base; dorsal erect. Petals suberect, obliquely and broadly ovate, subobtuse, about as long as the sepals and $1\frac{1}{2}$ lin. broad. Lip with concave, broadly oblong base, 1 lin. long, and a dilated, three-lobed limb of the same length, and $1\frac{1}{2}$ lin. broad; side lobes subfalcate-oblong, obtuse; front lobe smaller, triangular, acute; disc with a transverse triangular obtuse lamina at the base of the limb. Anther oblong, obtuse.—*Platanthera Buchananii*, Schlechter in Engl. Jahrb. xxiv. 420.

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan*.

Only known to me from the original description.

30*a*. **Habenaria staudtiana,** *Kränzl. Orch. Gen. et Sp.* 320, supersedes *Habenaria Staudtii*, Kränzl. M.S.

33*a*. **Habenaria Nicholsoni,** *Rolfe.* Plant 1¼ ft. high. Leaves 2, unequal, radical, spreading, ovate-orbicular, apiculate, ¾–1¼ in. broad. Stem with about 5 narrow acute sheaths. Raceme 4 in. long, about 6-flowered. Bracts lanceolate, acute, 6–8 lin. long. Pedicels 1–1¼ in. long. Dorsal sepal ovate-lanceolate, subobtuse, 5 lin. long; lateral deflexed, linear-oblong, subobtuse or apiculate, 5½ lin. long. Petals simple, broadly lanceolate, acute, as long as the dorsal sepal, and adpressed to it, forming a hood. Lip trilobed; side lobes falcate-oblong, subobtuse, somewhat spreading, 9 lin. long, 3 lin. broad; front lobe lanceolate-oblong, subobtuse, 7 lin. long, 1½ lin. broad; spur 10 lin. long, filiform at the base, subclavate above the middle. Stigmatic processes 2 lin. long, linear-clavate, parallel and somewhat united by their margins, revolute at the apex. Anther channels somewhat curved, slightly over half as long as the stigmas. Rostellum subulate, acute, 1 lin. long.

Mozamb. Dist. British Central Africa: North Nyasaland and Upper Loangwa River; near Fort Young, *Nicholson !*

33*b*. **Habenaria Johnsoni,** *Rolfe.* Plant 10 in. high. Leaves 2, radical, spreading, broadly ovate, subobtuse or apiculate, membranous, 1–1¼ in. long. Stem with about 4 lanceolate acuminate sheaths. Raceme short, about 3- or 4-flowered. Bracts lanceolate, acuminate, 5–6 lin. long. Pedicels 8 lin. long. Dorsal sepal ovate-oblong, subacute, 5 lin. long; lateral deflexed, falcate-oblong, subobtuse, 6 lin. long. Petals simple, falcate-lanceolate, acute, as long as the dorsal sepal, and adpressed to it, forming a hood. Lip trilobed; side lobes lanceolate-oblong, subobtuse, somewhat spreading, 8 lin. long, 1 lin. broad; front lobe elliptic-oblong, subobtuse, as long as the lateral, but more than twice as broad; spur filiform, 1 lin. long. Stigmatic processes 2 lin. long, clavate-capitate from a slender base. Anther channel slender. Rostellum subulate, narrow.

Mozamb. Dist. Portuguese East Africa: mountains east of Lake Nyasa, *Johnson !*

60*a*. **Habenaria incompta,** *Kränzl. Orch. Gen. et Sp.* 462. Tubers oblong, obtuse, 14–19 lin. long, 9 lin. broad. Stem 1 ft. high, rather stout, leafy. Leaves oblong, obtuse, 4 in. long, 14 lin. broad, very thin, decreasing upwards into the bracts. Spikes 3–4 in. long, many-flowered. Bracts large, ovate-oblong, acute, as long as the pedicels, pilose on the margin and nerves, especially underneath. Dorsal sepal small, cucullate, acute, 1½–2 lin. long; lateral reflexed, obovate-oblong from a cuneate base, veined, laterally apiculate, 4 lin. long, 2½ lin. broad. Petals bipartite; posterior lobe linear-spathulate, obtuse, densely fimbriate, 2 lin. long, adpressed to the margin of the dorsal sepal, forming a galea; anterior lobe attenuate from a transversely oblong base, falcately triangular, 5 lin. long, 2½ lin. broad. Lip

3-lobed; lobes linear; front lobe 7–8 lin. long; spur filiform, clavate at the apex, 10 lin. long. Stigmatic processes triangular-attenuate, laterally compressed, as long as the anther channels. Rostellum small, acute.

Nile Land. Abyssinia: Samen; Woina, near Debra Eski, 6900–7500 ft., *Schimper*.

Only known to me from the original description, in which it is compared with *H. cultrata*, A. Rich. and *H. cultriformis*, Kränzl.

61*a*. **Habenaria Rivæ,** *Kränzl. Orch. Gen. et Sp.* 238. Plant very robust, 4 ft. high. Stem leafy. Leaves 6, oblong-lanceolate, acute, 1 ft. long, 2 in. broad, decreasing upwards. Spike rather short, dense, many-flowered. Bracts exceeding the flowers, ovate-lanceolate, acuminate, $\frac{3}{4}$ in. long or the lower longer, upper hairy. Pedicels 7 lin. long. Flowers 3 lin. long. Dorsal sepal cucullate, oblong, acute, lateral subobliquely ovate, more than twice as broad as the dorsal, setose at the margin. Petals ovate, acute, nearly simple, but extended in front into an acute angle, as if indicating a nearly suppressed front lobe. Lip as long as the petals, simple, ovate-lanceolate, acuminate, with a broad thickened line or callus from base to apex; spur filiform, inflated at the apex, 8 lin. long. Column punctate-scaberulous throughout; stigmatic processes long, arcuate, cochleate at the apex; anther channels as long as and parallel to the stigmatic processes; rostellum linear, acute, reflexed, a little longer than the anther.

Nile Land. Locality not specified, probably Somaliland, *Ruspoli & Riva*, 1382.

A very distinct species, only known to me from the original description.

64. **Habenaria insignis,** *Rolfe*. The name *Habenaria insignis* having been applied by Schlechter to a South African species (*Engl. Jahrb.* xx. *Beiblatt*, 32), I propose re-naming the present one **H. mirabilis,** *Rolfe*.

105. **Habenaria rhopalostigma,** *Rolfe*, add *ex Kränzl. Orch. Gen. et Sp.* p. 342.

4. **Platycoryne buchananiana,** *Rolfe*. To this must be referred *Habenaria buchwaldiana*, Kränzl. in. Engl. Jahrb. xxiv. 503. See Kränzl. Orch. Gen. et Sp. 452.

8*a*. **Satyrium Buchananii,** *Schlechter in Engl. Jahrb.* xxiv. 422. Plant glabrous, rather strong, 14–22 in. high. Leaves radical, 2, arising from distinct buds at the base of the stem, suberect, lanceolate, subacute, narrowed at the base, 4–10 in. long, $1\frac{1}{4}$–2 in. broad. Scape straight or slightly flexuose, with numerous loose cucullate acuminate or acute sheaths. Spike cylindrical, rather dense, $3\frac{1}{4}$–$4\frac{1}{4}$ in. long, 1 in. broad, many-flowered. Bracts leafy, lanceolate, acuminate, more or less exceeding the flowers, gradually decreasing upwards, ultimately deflexed. Pedicels 6–7 lin. long. Sepals and petals spreading, connate only at the base; the former linear-ligulate, obtuse, with the lateral subfalcate and

3½ lin. long; the latter slightly broader, 3 lin. long, and reflexed at the apex. Lip cucullate, scarcely as long as the petals, with an erect somewhat acuminate apex, an oblong mouth, and the median nerve somewhat thickened and keeled; spurs filiform, 2¼ in. long. Column slender, terete; stigma subquadrate, with a rounded apex, about half as long as to the column; rostellum oblong from the base and trilobed, side lobes short and tooth-like, front lobe larger and rounded.

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan*.

Only known to me by the original description, but remarkable for its very long spurs.

11*a*. **Satyrium anomalum,** *Schlechter in Engl. Jahrb.* xxiv. 424. Plant stout, erect, glabrous, 20–32 in. high. Leaves not known. Stem with several distant loose acute sheaths. Spikes elongate, cylindrical, 8–10 in. long, loosely many-flowered. Bracts leafy, erect at first, ultimately reflexed, lanceolate, acute, glabrous, lower exceeding the flowers, upper scarcely equalling them. Pedicels scarcely 5 lin. long. Flowers green. Sepals and petals spreading, connate to the middle into a linear claw; lateral sepals obliquely falcate-oblong, obtuse, 1½ lin. long, odd one linear, obtuse, shorter than the lateral. Petals linear, obtuse, as long as the odd sepal, slightly dilated and puberulous at the apex. Lip galeate, subglobose, scarcely keeled behind, free margin erect, subacute at the apex; mouth much contracted; spurs filiform, spreading or ascending, as long as the pedicels. Column slender, terete, somewhat curved; stigma subquadrate or 4-lobed; rostellum as long as the stigma, subquadrate-oblong, somewhat trilobed, side lobes short, toothlike and acute, middle lobe large, suborbicular, and shortly stalked.

Mozamb. Dist. British Central Africa: Nyasaland, *Buchanan*.

Only known to me from the original description, but clearly allied to *S. minax*, Rolfe, though apparently different in the colour of the flowers and some other details.

12*a*. **Satyrium fischerianum,** *Kränzl. in Engl. Jahrb.* xxiv. 507. Plant 22 in. high, stout. Roots long and dense. Radical leaves 3, large, amplexicaul, ovate-lanceolate, acuminate, 8–9 in. long, 1¼–1½ in. broad, cauline much smaller. Spike 6 in. long, cylindrical, dense-flowered. Bracts ovate, acuminate, 5–7 lin. long, all reflexed after flowering, margins densely glandular-pilose. Pedicels crystalline-papillose. Flowers minute. Lateral sepals oblong, suboblique, 1½ lin. long; odd one, together with the petals, narrower, obovate-oblong, obtuse, 1–1¼ lin. long. Lip galeate, carinate, 2 lin. long, apiculate, "margin right-angled on either side," mouth open; spurs filiform, 4½–5 lin. long, exceeding the pedicels. Column short, incurved; stigma semiorbicular with crenulate margin; rostellum longer and narrower; with the middle lobe geniculate, complicate, obscurely cochleate and acute.

Mozamb. Dist. German East Africa: Masai highlands, without precise locality, *Fischer*, 575.

Only known to me from the original description, but said to recall very strongly *S. Ivantalæ*, Rchb. f.

13*a*. **Satyrium trachypetalum,** *Kränzl. in Engl. Jahrb.* xxiv. 505. Stem 16–24 in. high, leafless at flowering time. Sheaths numerous, lanceolate, acute or acuminate, shorter than the internodes. Leaves unknown. Spikes often half as long as the scape, lax, many-flowered. Flowers greenish-yellow, 5 lin. apart. Bracts ovate-lanceolate, acuminate, deflexed, longer than the flowers, 5 lin. long. Pedicels slightly scabrous, 3–3½ lin. long. Sepals minutely puberulous; lateral oblong, incurved, 1½ lin. long, apex oblique; odd one oblong, 1 lin. long. Petals obovate, obtuse, deeply connate with the sepals, 1 lin. long, face densely villous. Lip 2–2½ lin. long, deeply cucullate, margin membranous and wholly reflexed, apex short and acute, mouth and interior wholly glabrous; spurs very slender, twice as long as the pedicel, 7 lin. long. Column short; stigma large, subquadrate; rostellum much smaller than the stigma, with minute acute side lobes and an orbicular middle lobe.

Mozamb. Dist. German East Africa: Usambara; Muafa, 3900–4250 ft., Nguiro, 4600 ft., and Mt. Jumba, 5500 ft., *Buchwald*, 61, 129, and 515.

Only known to me from the original description.

15*a*. **Satyrium mystacinum,** *Kränzl. in Engl. Jahrb.* xxiv. 506. Leaves several, lanceolate, acute, distant on the scape, the largest 4¾ in. long, 9–14 lin. broad, the remainder much smaller. Scapes 1–2½ ft. high, many-flowered and somewhat lax. Bracts scarcely deflexed, lanceolate, acute, 6 lin. long, margins glabrous. Flowers rose-coloured. Lateral sepals obovate-oblong, cochleate, 2–2½ lin. long, with a brown cartilaginous apex and minutely papillose margin; odd one ligulate, obtuse, as long as the lateral. Petals much like the lateral sepals but a little smaller. Lip deeply cucullate, 2–2½ lin. long, narrowed into the spurs and keeled, margin minutely papillose; spurs 6 lin. long. Column slender; stigma short, semi-orbicular; rostellum slightly longer, with narrow acute-angled side lobes, and a rounded cochleate deflexed middle lobe; anther large.

Nile Land. British East Africa: Ruwenzori, 8500 ft., *Stuhlmann*, 2359.

Only known to me from the original description.

18. **Satyrium Buchanani,** *Rolfe*. The name *Satyrium Buchananii* having been applied by Schlechter to another species (see 8*a*), I propose re-naming the present one **S. speciosum,** *Rolfe*.

16*a*. **Satyrium goetzenianum,** *Kränzl. in Engl. Jahrb.* xxiv. 506. Spike 7 in. long. Bracts lanceolate, acuminate, longer than the flowers. Sepals and petals obovate-oblong, obtuse or rounded, subequal, minutely ciliate at the margins. Lip broadly ovate, cucullate, acute at the apex, glabrous inside; mouth ample; spurs attenuate, ⅓ longer than the ovary. Stigma trilobed; side lobes small; front lobe large, oblong, obtuse. Glands of the pollinia situated in a wide angle between the front and side lobes of the stigma.

South Central. Congo Free State: Kirunga Volcano, north of Lake Kivu, 9850 ft., *Graf Goetzen*.

Only known to me by the original very imperfect description, in which it is compared with *S. coryophoroides*, A. Rich. and *S. brachypetalum*, A. Rich.

5*a*. **Disperis mozambicensis,** *Schlechter in Engl. Jahrb.* xxiv. 428. Plant dwarf, erect, very glabrous, $2\frac{3}{4}$–5 in. high. Stem slender, straight, distantly 3-leaved. Leaves ovate-oblong or ovate-lanceolate, acute or subacute, somewhat spreading, the lower 5–10 lin. long, $3\frac{1}{2}$–5 lin. broad, the upper rather smaller. Raceme subcorymbose, few-flowered. Bracts leafy, ovate or ovate-oblong, acute, shorter than the pedicels. Pedicels $4\frac{1}{2}$ lin. long, glabrous. Flowers medium-sized, pale rose. Dorsal sepal reflexed and nearly horizontal, narrowly linear, 6 lin. long, $\frac{1}{2}$ lin. broad, united with the petals into an obovate-oblong, obtuse hood; lateral sepals obliquely oblong from a narrow base, obtuse, somewhat falcate, the basal fourth united, the lower half produced into an obtuse sac, 5 lin. long, 3 lin. broad. Petals concave, lanceolate, acute, falcate, 6 lin. long, nearly $2\frac{1}{2}$ lin. broad, the front margin slightly cilated. Lip erect, with a very narrow linear claw, $1\frac{1}{2}$ lin. long, suddenly forked at the apex, minutely puberulous; limb elongated in front, filiform, suddenly dilated, suborbicular, 3 lin. long, scarcely 1 lin. broad, upper face papillose-puberulous, disc with a longitudinal fleshy crest, $\frac{1}{2}$ lin. high. Column with a pair of slightly twisted falcate cartilaginous arms; anther cells short; rostellum convex, retuse at the apex.

Mozamb. Dist. Portuguese East Africa: near Beira, at the mouth of the River Pungwe, *Schlechter*.

Only known to me from the original description, but said to be allied to *D. reichenbachiana*, Welw.

8. **Disperis kamerunensis,** *Schlechter in Engl. Jahrb.* xxiv. 431, supersedes *D. Preussii*, Rolfe. Both were based upon the same number.

15*a*. **Moræa kitambensis,** *Baker*. Corm not seen. Stem more than 3 ft. long including the panicle, moderately stout, erect, very much branched. Lower leaves linear, firm, glabrous, erect, much shorter than the stem, sheathing its base. Peduncle long, slender, erect, viscous below the spathes. Spathes cylindrical, $1\frac{1}{4}$ in. long; inner valve lanceolate, rigid; outer valve small. Perianth fugitive, apparently lilac, under 1 in. long. Capsule subglobose, $\frac{1}{3}$ in. long.

Lower Guinea. Angola: Bangala; in swamps at Kitamba on the River Kuango, *Buchner*, 679! in Berlin Herbarium.

15*b*. **Moræa aurantiaca,** *Baker*. Corm not seen. Stem $\frac{1}{2}$ ft. long below the first branch, bearing 2 small rigid linear glabrous sheath-leaves. Panicle 1 ft. long, corymbose, consisting of 3 long-peduncled clusters; branches slender, erect, viscous below the spathes; spathes cylindrical, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long; inner valve lanceolate; outer very short. Perianth bright yellow, fugitive. Capsule subglobose, $\frac{1}{4}$ in. diam.

Lower Guinea. Angola: Malange, *Mechow*, 303! in Berlin Herbarium.

4*a*. **Aristea longifolia,** *Baker*. Leaves many in a basal rosette, erect, linear, rigid, glabrous, 1½ ft. or more long, ¼ in. broad, closely ribbed. Stem above 1 ft. long, flat and narrowly winged throughout, nearly simple, leafless. Clusters of flowers about 3, the lowest on a short ascending peduncle with a much-reduced leaf at the base; bracts oblong, ¼ in. long, with a firm centre and broad entire membranous margins. Perianth not seen. Capsule oblong, ¼ in. long, obtusely angled, distinctly peduncled.

Mozamb. Dist. German East Africa: mountains of Usambara, 5000 ft., *Buchwald*, 469! in Berlin Herbarium.

7*a*. **Gladiolus mosambicensis,** *Baker*. Corm globose, under 1 in. diam.; outer tunics of parallel fibres. Produced leaves short, erect, basal, narrowly linear, glabrous, convex on the back, with stout angular raised crowded ribs. Stem slender, ½–1 ft. long, bearing 2 small sheath-leaves. Spike lax, secund, simple or forked at the base, 4–8 in. long; lower outer spathe-valve oblong-navicular, green, ½ in. long. Perianth pink, 1¼ in. long; tube subcylindrical, curved, ¼ in. long; upper segments obovate-spathulate, obtuse; lower with an oblong acute blade as long as the claw. Stamens nearly as long as the upper segments.

Mozamb. Dist. Portuguese East Africa: Beira, *Braga*, 117! in Berlin Herbarium.

7*b*. **Gladiolus Antunesii,** *Baker*. Corm not seen. Stem 1½–2 ft. long, moderately stout, bearing 4–5 rigid linear glabrous strongly ribbed sheath-leaves, the central ones with short free tips. Spike forked at the base, very lax, 5–6 in. long, not secund; outer spathe-valves oblong-navicular, green tinged with purple, ½–¾ in. long. Perianth-tube curved, as long as the spathe; limb purple, 1 inch long; upper segments obovate-spathulate, obtuse, the central one ½ in. broad; lower segments as long, obovate-unguiculate. Stamens nearly as long as the perianth.

Lower Guinea. Angola: Huilla, *Antunes*, 326! in Berlin Herbarium.

18*a*. **Gladiolus macrophlebius,** *Baker*. Corm not seen. Basal leaves 3, erect, linear, a foot or more long, ⅓–½ in. broad, sheathing the base of the stem, glabrous, with thick stramineous veins and margins. Stem 2 ft. long, bearing a reduced leaf at the middle. Spike very lax, secund, 6–9 in. long; outer spathe-valve lanceolate, acuminate, green, ¾–1 in. long. Perianth deep red, 1½ in. long; tube curved, ½ in. long; segments oblong-spathulate, obtuse, subequal, 1 in. long. Stamens much shorter than the perianth.

Lower Guinea. Angola: Huilla, *Antunes*, 29! in Berlin Herbarium.

19*a*. **Gladiolus oliganthus,** *Baker*. Corm globose, under 1 in. diam.; outer tunics membranous, brown. Basal leaves rigid, linear, glabrous, the largest ½ ft. long, ⅓ in. broad. Stem slender, 9–12 in. long, bearing a single sheath-leaf. Spike very lax, 6–9 in. long; lower outer spathe-valve lanceolate, green, 1–1½ in. long. Perianth white;

tube rather curved, 1 in. long, narrowly funnel-shaped; upper segment not cucullate, oblong-spathulate, subacute, 1½ in. long; lower similar, but smaller. Stamens not reaching halfway up the upper segment.

Mozamb. Dist. German East Africa: Unyamwezi; Gonda, in moist meadows, *Bohm*, 45! in Berlin Herbarium.

23*a*. **Gladiolus quilimanensis,** *Baker*. Corm globose, 1 in. diam.; outer tunics brown, membranous, reticulated. Basal leaves 3–4, linear, thin, flat, glabrous, sheathing the lower part of the stem, 1–1½ ft. long, ⅓–½ in. broad. Stem 2–2½ ft. long, bearing 1–2 reduced leaves. Spike very lax, 6–8 in. long; lowest outer spathe-valve oblong-lanceolate, 2 in. long, firm, green; flowers erect. Perianth bright pink; tube 1 in. long; segments oblanceolate-oblong, obtuse or subacute, subequal, twice as long as the tube. Stamens much shorter than the perianth.

Mozamb. Dist. Portuguese East Africa: Quilimane, *Stuhlmann!* in Berlin Herbarium.

27*a*. **Gladiolus pallidus,** *Baker*. Corm not seen. Produced basal leaves many, narrowly linear, glabrous, 1½–2 ft. long, with a thick midrib and involute edges. Stem 2 ft. long, with a few reduced leaves. Spike very lax, secund, 6–9 in. long; lower outer spathe-valve firm, green, lanceolate, 2–3 in. long. Perianth pale pink; tube subcylindrical, curved, 1 in. long; upper segment cucullate, oblong, obtuse, 1–1¼ in. long; 3 lower small, deflexed, acute. Stamens much shorter than the upper segment.

Lower Guinea. Angola: Huilla, *Antunes*, 42! in Berlin Herbarium.

40*a*. **Gladiolus (Hebea) subulatus,** *Baker*. Corm not seen. Leaves subulate, wiry, glabrous, the lowest 1 ft. long, ½ lin. diam., with a thick midrib and enrolled edges. Stem very slender, under 1 ft. long, bearing 2 reduced sheathing leaves, with a short linear-subulate free tip. Spikes lax, secund, few-flowered; spathe-valves oblong-lanceolate, pale, rigid, ⅓–½ in. long. Perianth bright pink, 1 in. long; tube as long as the spathe, curved; upper segments oblong-unguiculate, obtuse, ⅓ in. broad; lower as long, with a very small blade and long claw. Stamens nearly as long as the perianth.

Lower Guinea. Angola: Huilla, *Antunes*, 149! in Berlin Herbarium.

1*a*. **Hypoxis camerooniana,** *Baker*. Corm ¼ in. diam., bristly at the crown. Leaves 2–4, narrowly linear, ½–2 in. long, rigid, densely hairy. Peduncles 1–2 to a corm, short, simple, silky. Perianth-segments lanceolate, ⅙ in. long, yellow, densely silky outside. Stamens half as long as the perianth; filaments as long as the anthers. Ovary clavate, densely silky, ⅛ in. long. Capsule turbinate, ⅛ in. diam.

Upper Guinea. Cameroons, 6000–7000 ft., *Preuss*, 848! in Berlin Herbarium.

1*a*. **Buphane Fischeri,** *Baker*. Bulb and leaves not seen. Peduncle above ½ in. diam. Umbel very dense, 3–4 in. diam.; pedicels

$\frac{1}{2}$ in. long. Perianth 1 in. long; segments linear, obtuse, spreading, falcate, half as long as the cylindrical tube. Stamens rather shorter than the perianth-segments; anthers linear, $\frac{1}{12}$ in. long.

Mozamb. Dist. German East Africa, *Fischer*, 9! in Berlin Herbarium.

17*a*. **Crinum Stuhlmanni,** *Baker*. Bulb and leaves not seen. Peduncle stout ($\frac{3}{4}$ in. diam.). Umbel dense, many-flowered; spathe-valves large, thick; pedicels 1–2 in. long; flowers erect. Perianth-tube slender, 3 in. long; limb 5 in. long; segments oblanceolate, $\frac{1}{2}$ in. broad high up. Stamens reaching the tip of the perianth-segments.

Mozamb. Dist. German East Africa: Dar-es-Salam, *Stuhlmann*, 8536! in Berlin Herbarium.

11*a*. **Eriospermum Rautanenii,** *Schinz in Bull. Herb. Boiss.* vi. 522. Tuber globose, above $\frac{1}{2}$ in. diam. Leaf solitary, contemporary with the flowers, ovate, cuspidate, $1\frac{1}{2}$ in. long, above 1 in. broad, obscurely cordate at the base, glabrous, glaucous green. Raceme lax, subcorymbose, $1\frac{1}{2}$–2 in. long; pedicels erecto-patent; bracts $\frac{1}{8}$–$\frac{1}{6}$ in. long. Perianth campanulate, $\frac{1}{3}$ in. long; segments whitish, keeled with pale red. Capsule turbinate, shorter than the perianth.

Lower Guinea. Amboland; Olukonda, *Rautanen*, 227.

No specimen at Kew.

CORRECTIONS.

Page 14, line 40, for ORESTIA read ORESTIAS.
,, 15, bottom line, for MANNIELLIA read MANNIELLA.
,, 18, line 31. The correct name of this genus is ORESTIAS, not ORESTIA as printed in Journ. Linn. Soc. xxiv. 197.
,, 85. **Lissochilus roseus,** *Lindl. Dendrobium roseum*, Sw. is shown by an examination of the type to be referable to *Polystachya elastica*, Lindl., and not to this species as stated by Lindley.
,, 127. **Polystachya grandiflora,** *Lindl.* The type of *Limodorum cucullatum*, Afz., shows it be synonymous with *Lissochilus arenarius*, Lindl.
,, 415, line 3, for *D. zanzibarensis* read *D. sansibarensis*.

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